AGRICULTURAL SCIENCES
UNDERGRADUATE RESEARCH
SYMPOSIUM 2025

"EMPOWERING RESEARCH FOR INNOVATIVE AGRICULTURE"

BOOK OF

ABSTRACTS

AgSURS|2025

Empowering Research for Innovative Agriculture

Faculty of Agricultural Sciences | Sabaragamuwa University of Sri Lanka

14TH FEBRUARY 2025

FACULTY OF AGRICULTURAL SCIENCES

SABARAGAMUWA UNIVERSITY OF SRI LANKA

ISSN : 2989-0535

Agricultural Sciences Undergraduate Research Symposium 2025

(AgSURS 2025)

Sabaragamuwa University of Sri Lanka

14th February, 2025

'Empowering Research for Innovative Agriculture'

Book of Abstracts

AgSURS 2025
Faculty of Agricultural Sciences
Sabaragamuwa University of Sri Lanka
P.O. Box 02, Belihuloya, Sri Lanka, 70140

Abstract book of Agricultural Sciences Undergraduate Research Symposium 2025

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted in any form or by any means electronic, mechanical, photocopying, recording or otherwise- for commercial purposes without the permission of the publisher. The Editorial Board of AgSURS 2025 and the Sabaragamuwa University of Sri Lanka are not responsible for the concepts, ideas and views reflected in the abstracts published in this book of abstracts or for any instances of duplication caused by the abstracts having been published elsewhere, if any.

ISSN: 2989-0535

Symposium Theme: 'Empowering Research for Innovative Agriculture'

Abbreviation: AgSURS 2025

Date: 14th February, 2025

Book of Abstracts

Citation: Ampitiyawatta, A.D. (Ed.). (2025). Abstract book of Undergraduate Research Symposium, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka.

Published by: Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka. P.O. Box 02, Belihuloya. 70140. Sri Lanka.

Contact:

Email: symposium@agri.sab.ac.lk
Web: https://agsurs.agri.sab.ac.lk
Telephone: + 94 45 22 800 75
Fax: + 94 45 22 800 41

Copy editor: Prof. AD Ampitiyawatta
Cover page design: Mr. Helitha Nilmalgoda
Abstract book compiled by: Dr. JLCS Perera
Program book compiled by: Ms. Hiruni Nayakarathna

AgSURS 2025 Organizing Committee

Symposium Chair: Professor Ruvini K. Mutucumarana

Coordinator: Mr. PPSK Patabandi

Secretary: Ms. MMSC Senevirathne

EDITORIAL BOARD

Prof. AD Ampitiyawatta (Editor-in-Chief)
Snr. Prof. RP Mahaliyanaarachi
Snr. Prof. AAY Amarasinghe
Snr. Prof. DMA Gunaratne
Snr. Prof. LP VidhanaArachchi
Snr. Prof. Achini De Silva
Snr. Prof. PMAS Karunaratne
Snr. Prof. M. Esham
Prof. CN Walpita
Prof. HSR Rosairo
Prof. TSP Jayaweera

Editorial Assistants:

Ms. Ruvini Bandara
Ms. AS Hettige

Agricultural Sciences Undergraduate Research Symposium 2025

14th February, 2025

'Empowering Research for Innovative Agriculture'

Thematic Areas

AGRICULTURAL ECONOMICS & AGRIBUSINESS

LIVESTOCK PRODUCTION

FISHERIES AND AQUACULTURE

FOOD PROCESSING & SAFETY

AGRICULTURE AND AGRI-ENVIRONMENT

Keynote Address

Prof. B.M.L.D.B. Suriyagoda

Importance of Research Exposure to Undergraduates

I am feeling privileged and honoured when I received the invitation to deliver the Key Note speech at this great occasion, and thus accepted it with great respect and appreciation. The decision was backed by two key emotions; i.e., I am a person who is so fascinated about research, and I consider this as an opportunity to share my experience with a group of next generation scientists. Today, these students are at a critical juncture of their careers, as they will soon get expose to the outside world, as independent individuals, for the first time in their life. Therefore, the confidence they have in them, both in terms of knowledge gained on subject matter as well as on the soft skills developed over the years with the engagement in many different activities are quite important. Additionally, the research exposure they have gained, during the last couple of months, was a platform for them to apply and test what they have learnt in the class and soft skills acquired. Therefore, engaging in research is an indication of one's progression in acquiring knowledge and developing skills. As we apply the existing knowledge when generating new knowledge through research, we undergo a cyclic process where we will not find an end. In this process we require a lot of patience, vigilance, endurance, and dedication, which will at last lead to success and further motivation. All these qualities of one's character will be immensely useful when developing the career as a happy and satisfied individual, family man, and citizen.

When look around, environment is experiencing dramatic changes at present than before, mainly due to the activity of humans, leading to high level of

uncertainty and risk. Therefore, the sustainability of current agriculture is also been challenged. As a result, innovative and smart agricultural technologies are an urgent need. In this regard, the mindset of new generation of agriculturalists will have a greater role ahead. Therefore, I strongly encourage these students to be continuously engaged, and accept whatever reach-out to you, and determined to make progress continuously. That will ultimately make you and the world in a better position. I wish you all a great success.

Professor B. M. L. D. B. Suriyagoda
Department of Crop Science
Faculty of Agriculture
University of Peradeniya

Message from the Chief Guest

Prof. M. Sunil Shantha

It is with great pleasure that I extend my warmest greetings to all participants, researchers, and organizers of the Agricultural Sciences Undergraduate Research Symposium 2025 (AgSURS 2025). This event is a significant platform for knowledge exchange, research dissemination, and fostering innovation in agricultural sciences.

Agriculture remains a cornerstone of our economy and a vital sector in ensuring food security and sustainable development. As we face global challenges such as climate change, resource scarcity, and the need for enhanced productivity, research and innovation in this field have been more crucial. This symposium provides a valuable opportunity for our young researchers to present their work, engage in scholarly discussions, and contribute to the advancement of sustainable agricultural practices.

I commend the Faculty of Agricultural Sciences and the organizing committee for their unwavering dedication in bringing this symposium to fruition. To the students and researchers, I encourage you to make the most of this event by sharing insights, collaborating with peers, and striving for excellence in your research endeavors.

May this symposium inspire new ideas, foster meaningful collaborations, and pave the way for impactful contributions to the agricultural sector. I wish all participants a successful and enriching experience at AgSURS 2025.

Thank you.

Professor M. Sunil Shantha
Vice-Chancellor
Sabaragamuwa University of Sri Lanka

Message from the Dean
Faculty of Agricultural Sciences

Prof. M.L.M. Chandrika Dissanayake

With great pleasure I convey this message to the 3rd undergraduate research symposium (AgSURS 2025). This event serves as an important platform for our students to present their research findings, share their innovative ideas, and engage with their peers and faculty members in meaningful discussions.

The primary objective of this symposium is to celebrate the dedication and hard work of our undergraduate researchers while offering them an opportunity to refine their research, receive constructive feedback, and advance towards publication. By presenting their findings, students not only contribute to the growing body of knowledge in the agricultural sciences but also lay a solid foundation for future scholarly work, including the publication of abstracts and full-length articles.

I encourage each of you to take full advantage of this opportunity to share your findings, to learn from one another, and to foster connections that will help you grow both academically and professionally. The work presented here today reflects the curiosity, passion, and commitment that our students have for advancing agricultural research and addressing the challenges in the agricultural sector.

Prof. M. L. M. Chandrika Dissanayake
Dean
Faculty of Agricultural Sciences
Sabaragamuwa University of Sri Lanka

Message from the Chairperson, AgSURS 2025

Prof. Ruvini K. Mutucumarana

On behalf of the Organizing Committee, it is a great honour and privilege to me to extend the welcome message to the Agricultural Sciences Undergraduate Research symposium (AgSURS 2025). This year AgSURS 2025 organized by the Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka will be held on 14th February 2025, at the premises of the Faculty of Agricultural Sciences in Belihuloya, Sri Lanka.

This event highlighted the hard work, dedication, and innovative research of our undergraduate students, reflecting their commitment to advancing agricultural sciences and addressing real-world challenges. These efforts not only strengthen the agricultural sector but also promote economic growth, rural development, and environmental conservation in Sri Lanka.

Through this symposium, we aim to foster a culture of scientific inquiry, critical thinking, and collaboration among young researchers. The diverse range of topics presented here underscores the dynamic nature of agricultural sciences and highlights the potential for meaningful contributions to food security, sustainability, and rural development.

We extend our heartfelt congratulations to all participants and express our gratitude to the Faculty, and industry collaborators who have made this symposium a success. I wish that this platform inspire continued exploration and innovation in the field of agriculture, driving progress and prosperity for our nation. I wish that the AgSURS 2025 will be a tremendous success.

Prof. Ruvini K. Mutucumarana
Symposium Chair
AgSURS 2025

Agricultural Economics and Agribusiness

Technical Session I

Time : 10.30 am - 12.30 pm
Venue : Lecture Hall 01
Track : Agricultural Economics and Agribusiness (AEC)
Session chair : Prof. H.S.R. Rosairo
Rapporteur : Ms. Ruwini Bandara
Session Coordinator : Ms. Chaminthi Wedage
Session Assistant : Ms. DPS Perera

Technical Session II

Time : 1.30 pm - 3.30 pm
Venue : Lecture Hall 01
Track : Agricultural Economics and Agribusiness (AEC)
Session chair : Snr. Prof. M. Esham
Rapporteur : Ms. Ovini Dissanayake
Session Coordinator : Ms. Chaminthi Wedage
Session Assistant : Ms. DPS Perera

Technical Session III

Time : 3.45 pm – 5.45 pm
Venue : Lecture Hall 01
Track : Agricultural Economics and Agribusiness (AEC)
Session chair : Prof. A.W. Wijeratne
Rapporteur : Mr. I.C. Hettiarachchi
Session Coordinator : Ms. Chaminthi Wedage
Session Assistant : Ms. DPS Perera

Technical Session IV

Time : 3.45 pm – 5.45 pm
Venue : Lecture Hall 04
Track : Agricultural Economics and Agribusiness (AEC)
Session chair : Prof. Sanjeewa Jayaweera
Rapporteur : Ms. Anjana Hettige
Session Coordinator : Ms. Thejani Dharmasekara
Session Assistant : Ms. BVDHL Dissanayake

Technical Session V

Time : 1.30 pm - 3.30 pm
Venue : Lecture Hall 05
Track : Agricultural Economics and Agribusiness (AEC)
Session chair : Snr. Prof. Achini De Silva
Rapporteur : Ms. Ruwini Bandara
Session Coordinator : Ms. Ama Rajapaksha
Session Assistant : Mr. EGSD Premarathna

Agriculture and Agri-Environment

Technical Session I

Time : 10.30 am – 12.30 pm
Venue : Lecture Hall 05
Track : Agriculture and Agri-Environment (AG)
Session chair : Prof. Asanga Ampitiyawatta
Rapporteur : Ms. Malitha Tharindi
Session Coordinator : Ms. Dilki Manimekala
Session Assistant : Mr. EGSD Premarathna

Technical Session II

Time : 3.45 pm – 5.45 pm
Venue : Lecture Hall 05
Track : Agriculture and Agri-Environment (AG)
Session chair : Snr. Prof. A. A.Y. Amarasinghe
Rapporteur : Ms. Hiruni Nayakarathne
Session Coordinator : Ms. Dilki Manimekala
Session Assistant : Mr. EGSD Premarathna

Livestock Production

Technical Session I

Time : 10.30 am – 12.30 pm
Venue : Lecture Hall 02
Track : Livestock Production (L)
Session chair : Prof. E. D. N. S. Abeyrathne
Rapporteur : Dr. Champika Perera
Session Coordinator : Ms. Poorni Sandamali
Session Assistant : Mr. MAHS Moragoda

Technical Session II

Time : 1.30 pm – 3.30 pm
Venue : Lecture Hall 02
Track : Livestock Production (L)
Session chair : Prof. RK Mutucumarana
Rapporteur : Dr. HDA Wimalarathne
Session Coordinator : Ms. Poorni Sandamali
Session Assistant : Mr. MAHS Moragoda

Technical Session III

Time : 3.45 pm – 5.45 pm
Venue : Lecture Hall 02
Track : Livestock Production (L)
Session chair : Prof. Darshanee Ruwandeepika
Rapporteur : Mr. DNN Madushanka
Session Coordinator : Mr. Pasan Madushanka
Session Assistant : Mr. MAHS Moragoda

Fisheries and Aquaculture

Technical Session I

Time : 10.30 am – 12.30 pm
Venue : Lecture Hall 03
Track : Fisheries and Aquaculture (L)
Session chair : Mr. A.J. Athula
Rapporteur : Dr. HDA Wimalarathne
Session Coordinator : Mr. Pasan Madushanka
Session Assistant : Ms. RLCS Rajapaksha

Technical Session II

Time : 1.30 pm – 3.30 pm
Venue : Lecture Hall 03
Track : Fisheries and Aquaculture (L)
Session chair : Mr. A.J. Athula
Rapporteur : Mr. P.P.S.K. Patabandi
Session Coordinator : Mr. Pasan Madushanka
Session Assistant : Ms. RLCS Rajapaksha

Food Processing and Food Safety

Technical Session I

Time : 10.30 am – 12.30 pm
Venue : Lecture Hall 04
Track : Food Processing and Food Safety (FP)
Session chair : Prof. CN Walpita
Rapporteur : Ms. Anjana Hettige
Session Coordinator : Ms. Thejani Dharmasekara
Session Assistant : Ms. BVDHL Dissanayake

Technical Session II

Time : 1.30 pm – 3.30 pm
Venue : Lecture Hall 04
Track : Food Processing and Food Safety (FP)
Session chair : Dr. Jagath Munasinghe
Rapporteur : Dr. Champika Perera
Session Coordinator : Ms. GNU Silva
Session Assistant : Ms. BVDHL Dissanayake

FP 15	Antibacterial effect of *Curcuma longa* (Turmeric) and *Cinnamomum verum* (Cinnamon Bark) on *Salmonella* Spp *KVG Kannanthudawa, PK Hitige, HAT Hettiarachchi, GN Athukorala, MGS Tharaka, GDPS Dilshani, NPM Abeysinghe, RAS Kawshalya, BBK Perera, ANN Kumari, MMM Deeshani, JHB Indiwaree, YPDC Kumari, TRI Kumari, LAGMP Liyandeniya, BMAM Balasooriya, S Kirubashini, JLCS Perera, DNN Madushanka, TSP Jayaweera, HAD Ruwandeepika*	64

PANEL OF REVIEWERS

Snr. Prof. A. Gunarathne

Sabaragamuwa University of Sri Lanka

Snr. Prof. D.A.M. De Silva

Sabaragamuwa University of Sri Lanka

Snr. Prof. L.P. Vidhana Arachchi

Sabaragamuwa University of Sri Lanka

Snr. Prof. M. Esham

Sabaragamuwa University of Sri Lanka

Snr. Prof. P.M.A.S. Karunarathe

Sabaragamuwa University of Sri Lanka

Snr. Prof. R.P. Mahaliyanaarachchi

Sabaragamuwa University of Sri Lanka

Prof. A.R.S.B. Athauda

University of Peradeniya

Prof. A.W. Wijeratne

Sabaragamuwa University of Sri Lanka

Prof. B.T.G.S. Kumara

Sabaragamuwa University of Sri Lanka

Prof. C.N. Walpita

Sabaragamuwa University of Sri Lanka

Prof. D.A.I. Dayaratne

Sabaragamuwa University of Sri Lanka

Prof. D.G. Dharmarathne

Sabaragamuwa University of Sri Lanka

Prof. G.D.K. Kumara

Sabaragamuwa University of Sri Lanka

Prof. H.A.D. Ruwandeepika

Sabaragamuwa University of Sri Lanka

Prof. H.S.R. Rosairo

Sabaragamuwa University of Sri Lanka

Prof. M.L.M.C. Dissanayake

Sabaragamuwa University of Sri Lanka

Prof. P.K. Dissanayake

Sabaragamuwa University of Sri Lanka

Prof. R.K. Mutucumarana

Sabaragamuwa University of Sri Lanka

Prof. R.M.A.S. Bandara

Sabaragamuwa University of Sri Lanka

Prof. S.H.P. Malkanthi

Sabaragamuwa University of Sri Lanka

Prof. S.K. Gunthilaka

Sabaragamuwa University of Sri Lanka

Prof. S.P. Jayaweera

Sabaragamuwa University of Sri Lanka

Dr. T.C. Kananke

Sabaragamuwa University of Sri Lanka

Dr. D.D. Wickramanayake

Sabaragamuwa University of Sri Lanka

Dr. D.N. Koralagama

University of Ruhuna

Dr. G.R.S.R.C. Samaraweera

Sabaragamuwa University of Sri Lanka

Dr. H.P.R. Priyankara

Sabaragamuwa University of Sri Lanka

Dr. J.L.C.S. Perera

Sabaragamuwa University of Sri Lanka

Dr. J.M.S.M. Rathnapala

University of Ruhuna

Dr. K.N.N. Silva

University of Ruhuna

Dr. L.D. Kalyani

Sabaragamuwa University of Sri Lanka

Dr. L.S. Lekamge

Sabaragamuwa University of Sri Lanka

Dr. M.A.J.P. Munasinghe

Sabaragamuwa University of Sri Lanka

Dr. P.G.I. Dias

Sabaragamuwa University of Sri Lanka

Dr. R.A.P.I.S. Dharmadasa

Uva Wellassa University of Sri Lanka

Dr. R.K.C. Jeewanthi

Sabaragamuwa University of Sri Lanka

Dr. S.T.C. Amarasinghe

Sabaragamuwa University of Sri Lanka

Dr. W.S.M. Senevirathne

Sabaragamuwa University of Sri Lanka

Mr. D.N.N. Madushanka

Sabaragamuwa University of Sri Lanka

Mr. G. Weerakkody

Sabaragamuwa University of Sri Lanka

Mr. G.A.C.A. Herath

Sabaragamuwa University of Sri Lanka

Mr. H.M.C.G. Bandara

Sabaragamuwa University of Sri Lanka

Mr. J.A. Athula

Uva Wellassa University of Sri Lanka

Mr. M.C.N. Jayasooriya

Sabaragamuwa University of Sri Lanka

Mr. P.P.S.K. Patabandi

Sabaragamuwa University of Sri Lanka

Mrs. D.J. Jagoda

Sabaragamuwa University of Sri Lanka

Mrs. J.W.A. Sajiwanie

Sabaragamuwa University of Sri Lanka

Mrs. K.G.L. Chathumini

Sabaragamuwa University of Sri Lanka

Mrs. K.L.B. Dharmarathne

Sabaragamuwa University of Sri Lanka

Mrs. K.M. Somawathie

Sabaragamuwa University of Sri Lanka

Mrs. M.S.H. Rathnasiri

Sabaragamuwa University of Sri Lanka

Mrs. R.D. Wijesinghe

University f Ruhuna

Mrs. W.V..K. Wasalthilaka

Sabaragamwa University of Sri Lanka

Ms. A.M.M. Aruppola

Sabaragamuwa University of Sri Lanka

Ms. P.W.M. Tharindi

Sabaragamuwa University of Sri Lanka

Consumer Perceptions Towards Student-Managed Restaurants in Sri Lanka: A Case Study at SURASA Agri-Food Restaurant in Sabaragamuwa University of Sri Lanka

MKNA Harischandra*, KGKW Kariyawasam, KKRP Perera, IC Hettiarachchi and UBE Sasanka

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*mknaharischandra@std.agri.sab.ac.lk

Student-managed restaurants (SMRs) are training facilities where future hospitality managers and employees gain practical experience. However, limited research explores their reception in Sri Lanka's social context, despite their widespread presence globally. This study bridges this gap by analyzing consumer perceptions of the SURASA Agri-Food Restaurant, operated by students at Sabaragamuwa University of Sri Lanka. It examines food quality, service quality, pricing, and the impact of student management to enhance operations and establish benchmarks for similar institutions. A quantitative study surveyed 117 university students who frequented SURASA. A structured questionnaire assessed customer expectations regarding food quality, service, pricing, and management. Findings revealed most customers rated food quality attributes taste, freshness, and presentation as "Good," with over 60% praising presentation. Staff knowledge was a standout factor in service quality, rated "Good" by 65.8% of respondents. Pricing was also positively perceived, with 44.4% expressing satisfaction with fairness and affordability. Student management contributed significantly to professionalism and efficiency, as noted by 89.7% of respondents. Marketing through Facebook and WhatsApp proved effective, with customers suggesting additional promotions such as discounts and live performances to enhance engagement. This research underscores the dual role of SMRs as educational platforms and social spaces, blending practical learning with quality service delivery. While customers were generally satisfied, improvements in food freshness, service speed, and diverse promotional strategies are recommended to boost satisfaction. These findings not only offer actionable insights for SURASA but also provide a model for developing and sustaining similar student-managed ventures in Sri Lanka, showcasing the potential of SMRs to integrate academic and industry excellence.

Keywords: *consumer perceptions, food quality, service standards, Sri Lanka, student-managed restaurants, SURASA*

Consumers' Preference for Using Online Food Delivery Services in the Northern Province of Sri Lanka

K Thanusha*, M Ujenthini, and V Tharshanya

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*thanusharam04@gmail.com

The study investigates the factors influencing consumer preferences and challenges associated with online food delivery services in the Northern Province of Sri Lanka, addressing a critical research gap in this emerging market. The research gap discussed in this paper is the lack of empirical research on the factors influencing consumer preferences and barriers they face in using online food delivery services in Northern Province, Sri Lanka. Though online food delivery service is mostly emerging in the northern region, this void keeps the service providers' ability to tailor their offerings to local consumers based on consumers' unique preferences. The sample size of this research is 384 residents in the Northern Province of Sri Lanka. The data collection method used in this research paper is the online Survey method (Google Form). Descriptive Analysis and inferential techniques were used for data analysis to explain the existing relationships between variables using the SPSS software version 27. Descriptive analysis techniques reveal that most of the online food delivery users comprised middle-aged males between the earning groups of above-average monthly incomes who were reasonably educated and lived mostly in Jaffna. Reliability analysis and multiple regression models revealed that convenience and service quality, technological factors, trust, and security were major positive influences on customer preference. In contrast, cost and delivery time negatively influenced consumers' preferences. The research paper discusses the importance of customizing marketing strategies and service improvements for different consumer segments. Service quality is measured using reliability, responsiveness, availability, assurance, and tangibility; reliability and responsiveness were the most predominant contributors to customer satisfaction. It implies that service providers have to upgrade convenience, affordable services, and timely delivery with high-sailing service standards for the Northern Province. Addressing such factors in improving customer experience offers possible avenues for attaining a competitive edge in the developing online food delivery market. Results provide valuable insights for companies wanting to improve customer experience with increased customer bases in the competition-driven online food delivery market.

Keywords: *consumer preferences, delivery time, online food delivery, service quality, Sri Lanka*

Consumer Perception of Biodegradable Straws on the Perceived Beverage Quality among consumers in Western Province of Sri Lanka

BAWIA Bothalagama*, ID Kohomban and DDP Maduhansi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*bawiabothalagama@std.agri.sab.ac.lk

This study examines the perceptions of consumers in the Western Province of Sri Lanka regarding bio-based alternative straws and their impact on the perceived quality of beverages. With growing environmental concerns about plastic pollution, bio-based alternatives such as paper, bamboo, and polylactic acid (PLA) straws have emerged as sustainable solutions. However, their adoption depends on factors such as usability, sensory impact, and consumer acceptance. A purposive sampling method was used to select 160 consumers aged 18 to 30 years. The research was done by descriptive analysis. The findings reveal that 81.8% of participants are aware of bio-based alternative straws, and 44% expressed a preference for paper and bamboo straws. Environmental consciousness and sensory factors, including durability and mouthfeel, emerged as key drivers of acceptance. Additionally, 78.5% of respondents indicated a willingness to pay a premium for eco-friendly options, though cost sensitivity and performance limitations, particularly for hot drinks and smoothies, were notable barriers. Consumer feedback showed moderately positive evaluations (54.4%) of Biodegradable straws, with high satisfaction regarding durability (60%) and texture (60%) but perceptions of changing taste of the beverage according to the biodegradable straws were slightly dropped (40%). The study also highlights the significant potential for bio-based straws to replace plastic ones in cold beverages and soft drinks, reflecting a promising market trend toward sustainability. The Western province, with its dynamic mix of urban and rural demographics, offers an interesting context to explore the interplay between environmental values and functional expectations. It was found to be a very promising market for bio-based innovations, which would align with global trends toward eco-friendly consumption. Recommendations include improving product performance, raising consumer awareness, and aligning pricing strategies to encourage greater acceptance.

Keywords: *bio-based straws, eco-friendly products, perceived beverage quality, Western province*

Perception and Awareness of University Students about Digital Currencies

AMSD Bandara*, GKDS Saranga, PGRL Welagedara and SHP Malkanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*supun.2000.dhananjaya@gmail.com

Despite the increasing significance of digital currencies, public awareness and knowledge about these technologies remain limited. University students, as early adopters of technology and innovation, represent a key group for evaluating the current level of understanding and awareness of digital currencies. This research explores university students' perception, awareness, knowledge, and behaviors toward digital currencies in Sri Lanka, a rapidly developing aspect of global financial systems. The study aims to evaluate awareness levels, assess knowledge, analyze attitudes and identify barriers to adoption, with the ultimate goal of providing insights and recommendations for educational, policy, and market interventions regarding digital currencies. A quantitative cross-sectional survey was conducted among 300 university students selected through a stratified random sampling method. A structured questionnaire was distributed via online platforms, and data were collected. The results were analyzed using descriptive statistics and correlation methods. The research showed that digital currencies were highly known (97%) and that Bitcoin was the most popular cryptocurrency. However, only 18 percent (18%) of students had a correct understanding of digital currency. Despite this, the study found a generally positive attitude towards digital currencies, with students recognizing the potential benefits of financial inclusion. The risks of volatility and regulatory uncertainty were identified as deterrents to adoption. Although most students had no actual use or investment, a small proportion reported (28%) use or investment, and barriers were reported as limited knowledge and interest. The study underscores the urgent need for universities to integrate digital currency education into their curricula. It will not only enhance students' knowledge and awareness but also prepare them for the future of the financial industry. Additionally, it highlights the importance of policymakers in developing informed regulatory frameworks and the financial industry in creating user-friendly tools for young consumers.

Keywords: *awareness, Bitcoin, digital currencies, Sri Lanka, university students*

An Analysis of Export Earnings and Trade Dynamics of Four Selected Sri Lankan Spices from 1990 to 2023

LPDY Yapa[1*], SHP Malkanthi[1], SAUMK Wijekoon[2] and UBE Sasanka[1]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Sri Lanka Export Development Board, Colombo 02, Sri Lanka*

[*]lpdyyapa@std.agri.sab.ac.lk

The Sri Lankan spice export sector, including cinnamon, clove, nutmeg and mace, and pepper, has significantly changed its global competitiveness due to evolving market dynamics, such as shifting consumer preferences and stricter regulations, and local constraints, like rising production costs and labor shortages. This study evaluates the export performance of these spices from 1990 to 2023 using a mixed-methods approach. Primary data were collected through structured questionnaires and In-depth interviews with 40 exporters and 20 export-related organizations. In contrast, secondary data were sourced from the Sri Lanka Export Development Board (1990–2023) and the International Trade Centre for recent statistics. The analysis employed descriptive statistics, time series analysis and Chi-square tests. An exponential model was fitted for trend analysis, revealing annual growth rates of 7.02% for cinnamon, 10.89% for pepper, 11.93% for nutmeg and mace, and 10.84% for cloves. Seasonal variations revealed peak export percentages for cinnamon in December (16.06%), pepper in August (12.43%), nutmeg and mace in July (11.16%), and cloves in February (14.66%). Exports reached their lowest levels in April for cinnamon (4.15%), pepper (3.82%), and nutmeg and mace (5.7%), while cloves experienced their lowest exports in October (3.42%). Chi-Square tests revealed significant associations between exporters' experience levels in the industry and perceived difficulties in accessing new international markets in the past five years, exporters' experience levels and whether they have faced rejection or returns due to quality issues from importers. Exporters struggle with growing competition from countries like Vietnam, Indonesia, and India. The study further highlights an unrealized extra export potential of $316 million compared to current exports of $338 million. This research provides actionable recommendations to enhance competitiveness, including value addition, organic certification, improved logistics, and targeted government policies. Implementing government policies that provide subsidies for organic certification, invest in R&D for sustainable farming practices, and enhance export infrastructure would effectively support the spice industry. Addressing these challenges can position Sri Lanka as a global leader in spice exports, fostering growth and sustainability in the industry.

Keywords: *export competitiveness, seasonal variations, spice industry, Sri Lanka, trade dynamics*

Challenges and Profitability of TJC Mango Cultivation in Anuradhapura, Sri Lanka

HMGBM Bandara*, RKC Jeewanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*hmgbmbandara@std.agri.sab.ac.lk

Mango is the most popular fruit in the world and has been described as the "King of Fruits". Tom EJC (TJC) mangoes, botanically classified as *Mangifera indica*, are a modern Sri Lankan variety. It was first discovered in the early 1990s. This cultivar could be recognized as a new variety which has distinct properties and was recommended for commercial cultivation in the dry zone of Sri Lanka. TJC mango cultivation in Sri Lanka has expanded significantly with substantial government support. Various challenges hinder farmers from securing optimal prices and fully realizing anticipated benefits from TJC mango cultivation. The broader objective of this research was to analyze the financial profitability and challenges of TJC mango cultivation. A total of 202 TJC mango farmers were selected as the sample size, utilizing the stratified random sampling technique. This study was conducted in Anuradhapura district. Farmers were asked to rank the challenges based on their experiences and Garrett and Woodsworth (1969) tables were applied to interpret the scores. The benefit-cost Ratio (BCR) calculation was implemented to analyze financial profitability considering the direct costs. As a result, it has been identified that TJC Mango Farmers are constrained by production problems such as a higher infestation of diseases, insects and pests, low-level knowledge of TJC mango cultivation and insufficient labour and marketing problems such as the absence of a fixed marketplace, constant price fluctuations, packaging and labelling requirements. TJC mango cultivation is financially profitable in the study area, with a 2.32 benefit-cost ratio. According to the realizations from the study, farmers need to focus on training opportunities, being introduced to the export-oriented market, and exposure to properly catered government support.

Keywords: *fruit marketing problems, mango production problems, Sri Lankan mango, TJC mango cultivation, TJC mango farmers*

Exploring the Economic Feasibility of Producing Value-Added Mushroom Products in Sri Lanka

WPNP Somasiri, WMGSM Weerakoon, WVPSP Wickramasinghe*, UBE Sasanka

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*wvpspwickramasinghe@std.agri.sab.ac.lk

This study investigates the economic feasibility of producing value-added mushroom products in Sri Lanka, focusing on dried mushrooms, fried mushroom mixtures, and mushroom sausages. Agriculture contributes 8.75% to Sri Lanka's GDP and is the primary livelihood for 30% of the population. Within this context, mushroom cultivation is a growing yet underutilized segment. With only 3-5% of farmers engaged in mushroom farming, its low resource demands and high nutritional value present significant expansion and value-addition opportunities. This study employs judgmental sampling to target 30 mushroom farmers with expertise or interest in value addition. Judgmental sampling, a non-random technique, was chosen for its effectiveness in focusing on individuals with specific knowledge or experience, ensuring relevant and insightful data. Data collection methods included structured interviews, focus groups, and questionnaires. Financial feasibility was assessed using metrics such as Net Present Value (NPV), Internal Rate of Return (IRR), and Benefit-Cost Ratio (BCR). The calculations accounted for adjusting future cash flows to reflect changing economic conditions, factoring in price fluctuations and demand patterns, and assessing the returns foregone from alternative investments or traditional farming practices, thus incorporating inflation, market variability, and opportunity costs for a comprehensive evaluation. The results reveal that dried mushrooms demonstrate the highest economic viability, with a BCR of 1.54, an NPV of Rs.6.42 million, and an IRR of 29.76%. Fried mushroom mixtures exhibit a BCR of 1.518, an NPV of Rs.6.46 million, and an IRR of 27.50%, catering to modern consumer preferences for ready-to-eat products. Though profitable with a BCR of 1.53 and an NPV of Rs.3.44 million, mushroom sausages face adoption barriers due to production complexity and low consumer awareness. Key barriers include a lack of technical knowledge, financial constraints, and market instability. Recommendations include farmer training, financial assistance, technology adoption, and consumer awareness campaigns. This study concludes that value-added mushroom products can enhance farmer income, reduce post-harvest losses, and support Sri Lanka's sustainable agricultural economy.

***Keywords**: economic feasibility, net present value (NPV), internal rate of return (IRR), benefit-cost ratio (BCR), return on investment (ROI)*

Export Performance of Coconut Shell Activated Carbon in Sri Lanka

LDT Muthunayake[1*], SHP Malkanthi[1], KVNN Jayalath[2] and UBE Sasanka[1]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Coconut Research Institute, Lunuwila, Sri Lanka*

*ldtmuthunayaka@std.agri.sab.ac.lk

Sri Lanka is the third leading exporter of coconut shell activated carbon (CSAC) in the world, contributing 16.9% of global CSAC exports and 17% of coconut export earnings in Sri Lanka. However, research on CSAC exports from Sri Lanka, particularly in terms of trends, comparative advantage, and trade dynamics, remains limited. This study addresses this gap by analyzing the trend, comparative advantage, and trade direction of CSAC exports from Sri Lanka over a period from 1976-77 to 2022-23. The research employs a quantitative approach to assess the export performance of Sri Lankan CSAC, using secondary data on export volumes and values from reports by the CDA, APCC, and the UN Comtrade database. Analytical techniques include trend analysis, Revealed Comparative Advantage (RCA), and Markov Chain Analysis, conducted with R software and MS Excel. The study results that the quadratic model with an R-squared of 0.9407 captures the trend of CSAC exports, indicating a positive growth with an average annual increase of 980.1 MT. According to the Revealed Comparative Advantage (RCA), Sri Lanka maintains a strong comparative advantage, with RCA values greater than 1, while both India and the Philippines also exhibit higher comparative advantages. Trade direction analysis reveals that the USA (90.78%) and Canada (76.1%) dominate the American market, with Brazil emerging as a potential market. In Africa, South Africa (98.4%) and Ghana (69.1%) are stable destinations. In Europe, the UK (89.4%), Germany (61%), and Italy (51.4%) are key destinations, with France and Turkey as emerging markets. In Asia, Japan (43.5%) and China (34.4%) are dominant, while Hong Kong is an emerging market. Overall, the Sri Lankan coconut shell-activated carbon export industry has been shown to hold strong potential for growth, supported by its demonstrated comparative advantage and expanding market opportunities. It can therefore be concluded that coconut shell-activated carbon exports have been positioned as a high-value contributor to Sri Lanka's export earnings.

Keywords: *coconut shell activated carbon (CSAC), export trends, revealed comparative advantage (RCA), trade direction, Sri Lanka*

Investigating Factors Influencing Consumer Preference for Imported vs. Local Dairy Products in Galle District

SWAU Premarathna*, JMM Harshani, APB Priyangaika, SHP Malkanthi and MMSC Senevirathne

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ayesha1999314@gmail.com

This study examines the factors shaping consumer preferences for local versus imported dairy products in the Galle District, Sri Lanka. This research topic was chosen due to a lack of studies focusing on comparative analyses of dairy products in the Galle District. The study focused on dairy products such as milk powder, ice cream, cheese, butter, and yogurt. The broad objective of the research was to analyze how various factors influence consumer choices. The specific objectives included assessing the impact of quality and health attributes, as well as understanding the roles of pricing and availability. Data were collected from 256 respondents using a structured questionnaire and analyzed through descriptive statistical methods. A convenience sampling method was employed to gather responses from diverse consumer groups.Quality was evaluated based on consumer perceptions, with questions designed to assess trust in production practices and the consistency of product quality. The study found that 78.1% of respondents preferred imported dairy products, primarily due to perceptions of superior quality, brand trust, and adherence to safety standards. In contrast, 21.9% of respondents favored local dairy products, citing affordability and freshness as advantages but expressing concerns about inconsistent quality and limited trust in production practices. Pricing emerged as a crucial factor, with 78.9% of participants highlighting its importance in purchase decisions. Additionally, 76.2% of respondents indicated they would prefer local products if availability improved. Health consciousness was another key factor, with 80.9% of respondents prioritizing health benefits when selecting dairy products. The findings suggest that consumer preferences for imported products are largely driven by perceived quality and reliability. However, local dairy products hold potential for growth if quality, availability, and trust can be improved. By addressing these priorities and implementing strategic distribution, the local dairy sector can reduce reliance on imports and better align with consumer demands in the Galle District. These conclusions are based on the observed preferences and stated perceptions of respondents captured through the structured questionnaire.

***Keywords**: consumer preferences, dairy products, health consciousness, pricing, product availability*

The Influence of Social Media on Food Purchasing Behavior Among the Millennials in Trincomalee District

S Luxcika*, C Keerthanan and MF Afrose

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*sluxcika@std.agri.sab.ac.lk

The unique socio-cultural and economic characteristics of the Trincomalee District provide an intriguing context for studying the influence of social media on food purchasing behaviors among millennials. This research explores the relationship between social media usage and food purchasing habits, focusing on the most influential platforms such as Instagram, Facebook, and TikTok - and types of content. These include recipe posts, food photography, influencer endorsements, advertisements, and user reviews. Additionally, the study examines the effects of variables such as internet access, culture, and brand loyalty on social media engagement among millennials in the Trincomalee District. For this quantitative research, a sample of 385 millennials defined as individuals born approximately between 1981 and 1996 residing in Trincomalee was surveyed using a questionnaire-based approach, facilitated through a snowball sampling technique. Snowball sampling was employed to effectively reach participants with the specified demographic who actively engage with social media, leveraging their networks for a broader yet relevant sample. Statistical analysis conducted with SPSS highlights the extent to which various social media platforms and specific content categories influence food purchasing decisions. The findings reveal that food photography and visually engaging content created by influencers have a significant impact on millennials, while cultural nuances and economic factors play a moderating role in their social media engagement. Access to the internet emerges as a crucial factor not only in determining the frequency of social media use but also in fostering trust in online content and developing brand loyalty. The study offers practical recommendations for businesses and policymakers seeking to leverage social media as a tool for effective marketing and consumer engagement. For example, businesses could implement targeted Instagram ad campaigns or collaborate with local influencers to deliver authentic and culturally resonant marketing strategies. It emphasizes the importance of tailoring strategies to align with the socio-cultural dynamics of the region and meet consumer expectations. By addressing a significant gap in the literature specific to the Trincomalee District, this research contributes to the broader understanding of digital consumer behavior and provides valuable insights into the evolving impact of social media on food purchasing behaviors in culturally diverse markets.

Keywords: *food purchasing behavior, millennials, social media content, social media influence, Trincomalee District*

Career Prospectives of Food Business Management Graduates: A Case Study at Sabaragamuwa University of Sri Lanka

TGDH Gamage*, JATT Jayasooriya, UTM Senevirathna and SHP Malkanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*dulminihansika12@gmail.com

The BSc Hons Food Business Management is a degree offered by the Department of Agri-Business Management in the Faculty of Agricultural Sciences at the Sabaragamuwa University of Sri Lanka. It was introduced in 2017 and only 3 batches already passed out. Undergraduates and university prospective students frequently lack critical information regarding the range of job opportunities available with the degree, the employment positions that they can qualify for upon graduation, and the additional educational qualifications and professional certifications that might be necessary for success in their field. This research aims to bridge this knowledge gap by analyzing the employability landscape by selecting a sample size of 117 graduates from the pass-out batches of graduates from 2015/2016, 2016/2017, and 2017/2018. There was a 75% response rate and according to the stratified random sampling method, primary data was gathered from direct interviews and online surveys. Descriptive analysis was used to analyze the data. The findings show that FBM graduates demonstrated a high and strong employment rate (88%). The private sector is the most dominant employer for FBM graduates (82.5%) when compared with the government, self-employed, and foreign employment. Personal connection is the key factor in job acquisition (68%). Most graduates work in mid-level positions (52.4%) with competitive salaries. Graduates work across various food-related industries and nearly half (48%) pursue additional education or certifications to develop their skills. A significant portion (59%) believes in the need for further professional qualifications to support career development. The study highlights the high relevance for graduates' occupations, but 7.8% report it as irrelevant to their current occupation and suggests the potential to enhance opportunities, diversify career support, and align education with evolving industry needs.

Keywords: *career prospectives, food business management graduates, Sabaragamuwa University of Sri Lanka*

Awareness of Health Benefits of Coconut Water Consumption among Residents of the North Western Province, Sri Lanka

NK Heenatigala*, HMPM Herath and UBE Sasanka

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

* nkheenatigala@std.agri.sab.ac.lk

This study examines consumer awareness, consumption patterns, and preference factors for coconut water consumption among residents of the North Western Province, Sri Lanka. Coconut water is a widely available natural beverage in the region and is valued for its numerous health benefits. It contains electrolytes, vitamins, sugar, protein, antioxidants, minerals, cytokinin, and dietary fiber. Additionally, it offers antiviral and antibacterial properties, supports hydration, aids digestion, and promotes weight loss. Using a structured survey and convenience sampling, data were collected from 348 respondents. The findings indicate that 87.6% of respondents are aware of the health benefits of coconut water consumption. Family, friends, and social media being the key sources of information of awareness of the health benefits of coconut water consumption. Nearly all participants (99.4%) reported consuming coconut water, with 37.1% drinking it daily. Taste (82.5%) and perceived health benefits (68.7%) were identified as the primary drivers of preference, while availability and cost were less significant. The results emphasize the potential to further promote coconut water as a health-enhancing and affordable beverage. We suggest strategic marketing initiatives leveraging social media, family networks, and community engagement can enhance its appeal. Highlighting its affordability and health benefits may also encourage greater consumption, ultimately improving public health outcomes in the region. This research provides valuable insights into consumer behavior and coconut water as a healthier alternative to other beverages in Sri Lanka, offering opportunities for economic growth.

Keywords: *natural beverage, coconut water, consumer preferences, health benefits, North Western Province Sri Lanka*

Willingness to Participate in Kitchen Waste Recycling Programme for Edible Home Gardening: A Study among Households in Selected Peri-Urban Areas in Rathnapura District, Sri Lanka

NYKA Dharmasena*, WMPGJM Wickramasinghe, KR Walpola, and UBE Sasanka

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*nykadharmasena@std.agri.sab.ac.lk

The circular bioeconomy emphasizes sustainably managing and reusing biological resources, such as food and agricultural waste, to minimize waste and maximize efficiency. Practices like kitchen waste recycling and bioenergy production address environmental challenges, promote sustainable development and support global sustainability goals. Sri Lanka faces severe food insecurity due to climate change, economic crises, and the COVID-19 pandemic. Edible home gardening offers households a sustainable way to reduce reliance on costly market food supplies. Compost, a key output of kitchen waste recycling, serves as an affordable input for home gardening, aligning with the circular bioeconomy. While this system is easily adopted in rural areas, urban and peri-urban adoption faces challenges, including participant perceptions. This study investigates the willingness to participate in kitchen waste recycling for home gardening in Pelmadulla, Godakawela, and Kahawaththa peri-urban areas in Sri Lanka. Data were collected from 70 households using convenience and judgmental sampling through face-to-face interviews with a structured questionnaire. Descriptive statistics, including cross-tabulations, were used for analysis. The findings show a significant willingness to adopt kitchen waste recycling, with 75% of non-recyclers expressing interest. The 25–45 age group is the most enthusiastic demographic, while households earning below Rs. 30,000 and unemployed individuals show strong interest due to perceived economic benefits. Motivations include cost savings, health benefits, and environmental impact. However, only 21% of respondents currently recycle, despite 93% being aware of it. Barriers such as time constraints and limited space require innovative, efficient, and space-saving solutions. Minimal interest among private-sector employees and students highlights the need for targeted outreach strategies.

Keywords: *circular bioeconomy, edible home gardening, food security, kitchen waste recycling, willingness to participate*

Preference for Adopting a Mobile Application for Food Delivery Systems: A Study among Restaurateurs and Community in Belihuloya Area

BHMSDK Katugaha*, WVGT Sewwandi, and RKC Jeewanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

* bhmsdkkatugaha@std.agri.sab.ac.lk

Mobile food delivery applications have revolutionized the food service industry by enhancing convenience and expanding restaurant reach. However, rural regions like Belihuloya, Sri Lanka, face technological adoption challenges. Home to Sabaragamuwa University, Belihuloya has a predominantly young population, presenting opportunities for innovation. Limited data on community preferences and restaurant owners' willingness to adopt such technologies have hindered progress. This study uses exploratory and descriptive methods to investigate the feasibility of a mobile food delivery application in Belihuloya. A convenience sampling approach was used to collect data from university students, residents, and restaurant owners. Results reveal that 67% of students, 58% of university staff, and 65% of residents expressed neutral satisfaction with the current system. In comparison, 66% of users familiar with food delivery apps and 62% of those unfamiliar showed a strong likelihood of adoption. Students and middle-income earners demonstrated considerable interest in the mobile food delivery app, with preferences for features such as menu browsing (54%), secure payment options (71.3%), reviews and ratings (38.6%), and order notifications (52%). Among restaurateurs, 100% prioritized functionalities like order and menu management, customer feedback, payment options, weekly sales reports, and notifications to enhance operational efficiency. Trust and security emerged as pivotal factors influencing adoption decisions. However, while 67% of restaurateurs with 1–3 years of experience and 80% handling 101–500 orders daily were comfortable with a subscription fee, 50% of experienced restaurateurs and 75% with lower order volumes expressed concerns. This underscores the need for tiered pricing models and a clear value proposition to accommodate varying comfort levels with subscription costs. This research contributes valuable insights into integrating mobile food delivery systems in rural settings by, highlighting the challenges and opportunities. Addressing trust and security concerns while tailoring app features to user needs will be crucial for driving adoption.

Keywords: *Belihuloya area, food delivery system, mobile applications, preference, restaurant partners*

Awareness and Utilization of Food Labels Among Consumers in the Kurunegala District: A Study on Informed Food Purchasing Behavior

BMRN Balasooriya*, WLK Anjala and CMNP Chandrasekara

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*bmrnbalasooriya@std.agri.sab.ac.lk

The awareness and utilization of food labels are vital in guiding consumers toward making informed and safe dietary choices. Food labels provide essential information about nutritional content, ingredients, and allergens, empowering consumers to make healthier purchasing decisions. This study analyzes the level of awareness and usage of food labels among consumers in the Kurunegala District, Sri Lanka. A quantitative research approach was employed, using a structured online survey with a sample of 150 respondents selected via convenience sampling. Data analysis was conducted using SPSS, with descriptive statistics offering insights into consumer behavior. The findings reveal that 92.6% of respondents, predominantly young and middle-aged individuals, demonstrated moderate to high awareness of food labels, with females showing greater engagement (67.3%). The most prioritized food label elements were expiry dates (30.5%) and price (24.7%), highlighting preferences for safety and cost-related information. Educational attainment significantly influenced awareness levels, and most respondents (88.9%) acknowledged the impact of label information on their purchasing decisions. However, challenges such as small print size (26.4%), complex vocabulary (18.5%), and incomplete information (23.1%) hinder effective label usage. The study underscores the need to improve food label design and consumer education to enhance usability and accessibility. Under the food (labeling and advertising) regulations 2022, mandate clear and comprehensive information to ensure consumer safety and informed choices. Labels must include the product's common name in three languages, the net contents must be expressed in metric units, and a list of ingredients should be displayed in descending order of weight, the label must feature the name and address of the manufacturer, distributor, and importer also imported products must include the country of origin. Additionally, display storage instructions and any consumer warnings in at least two languages. Misleading claims and unauthorized terms are prohibited to maintain. By addressing these needs food labels can be made more helpful for consumers to make better purchasing decisions.

Keywords: *consumer awareness, food labels, food safety, nutritional information, purchasing decisions*

Consumer Awareness of Handcrafted Tea: A Case of Western Province, Sri Lanka

JMBN Bandara*, DKD Chalanika, EGSK Thathsarani, SHP Malkanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*jmbnbandara@std.agri.sab.ac.lk

This study examines consumer awareness of handcrafted tea and the role of marketing mix elements in influencing consumer preferences in Sri Lanka's Western Province. The research aims to assess consumer knowledge, identify key purchasing factors, and evaluate marketing strategies for promoting handcrafted tea. A structured online questionnaire was administered to 180 respondents selected through a convenience sampling method. Data was analyzed using SPSS with descriptive statistics, multiple linear regression, and correlation techniques. The findings reveal that while tea consumption is universal, only 49.44% of respondents are aware of handcrafted tea. The most influential factors affecting consumer preferences are quality, health benefits, and price. Quality and health benefits have a significant positive impact on purchasing decisions ($p < 0.05$), whereas price has a slight negative influence. The study also investigates the marketing mix (4Ps), highlighting that supermarkets and online platforms are the most preferred purchase channels. Consumers show a strong preference for products priced below 1000 LKR per 10g, emphasizing affordability as a key determinant. Social media and influencer marketing emerge as the most effective promotional tools. The study underscores the potential for market growth by addressing consumer knowledge gaps and emphasizing the artisanal and health-related benefits of handcrafted tea. The findings provide actionable insights for policymakers and marketers to enhance consumer engagement through targeted awareness campaigns, competitive pricing strategies, and digital marketing efforts, ultimately positioning handcrafted tea as a premium yet accessible product.

Keywords: *consumer awareness, handcrafted tea, marketing mix, socio-economic factors, Sri Lanka*

Consumer Satisfaction and Loyalty Drivers for Ruhunu Rasara Products at Labuduwa Farm in Galle

KS Wijesekara[1*], SHP Malkanthi[1], JADS Jayakody[2] and UBE Sasanka[1]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

[2]*Government Farm Labuduwa, Akmeemana*

* kswijesekara@std.agri.sab.ac.lk

Consumer loyalty and satisfaction are key marketing aspects that indicate how well a product meets or exceeds consumer expectations and encourage repeat purchases. Satisfaction drives loyalty, which in turn ensures long-term customer retention, brand advocacy, and competitive advantage. Businesses aiming to succeed in competitive markets must understand these characteristics. The objectives of this study are to assess the levels of consumer satisfaction and loyalty for Ruhunu Rasara food products at Labuduwa Farm, identify the factors influencing customer satisfaction for these products, analyze the relationship between consumer satisfaction and consumer loyalty, and propose recommendations to enhance both consumer satisfaction and loyalty for Ruhunu Rasara food products. A sample of 150 customers was selected through judgmental sampling to ensure relevant and reliable responses. Data was collected through a structured questionnaire, focusing on consumer satisfaction and loyalty drivers such as customer experience, brand image, price sensitivity, and product quality. Descriptive statistics, correlation, and regression analyses were applied to analyze the results. The findings revealed that both levels for customer satisfaction (Mean = 4.12, SD = 1.005) and customer loyalty (Mean = 3.87, SD = 0.789) for Ruhunu Rasara food products at Labuduwa Farm are moderately positive, Regression analysis indicated that 54.3% of the variation in customer satisfaction was explained by the model factors (Adjusted R^2 = 0.543, F-statistic = 4.404, $p < 0.05$). A moderately positive correlation was observed between consumer satisfaction and loyalty($r = 0.665$, $p < 0.001$). The study suggests enhancing brand image, leveraging technology, improving customer experience, operational efficiency, optimizing pricing strategies, providing clear product information and offering loyalty programs to boost consumer satisfaction and loyalty, thereby achieving a competitive advantage.

Keywords: *brand image, customer experience, consumer satisfaction, loyalty, Labuduwa farm, product quality*

Analyzing the Woodapple Value Chain in Sri Lanka: A Monaragala District-Centered Approach

KWMGTS Rajapaksha[1*], IC Hettiarachchi[1] and Chanaka Gajanayke[2]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Smallholder Agribusiness and Resilience Project, Ministry of Agriculture, Livestock, Land, and Irrigation*

[*]thisurajapaksha@gmail.com

The wood apple (*Limonia acidissima*), an underutilized fruit with high nutritional value has substantial potential for agribusiness development in Sri Lanka. However, inefficiencies across its value chain hinder its market potential. This study evaluates the wood apple value chain structure, knowledge, and information flows, and economic performance, offering actionable insights to enhance value addition and efficiency. This research was conducted in high wood apple collection areas in Monaragala District, including key sites such as Wellawaya, Buttala, Thanamalwila, and Kataragama, complemented by market analysis in Colombo. Data were collected from 30 growers, 15 collectors, 6 traders, and 2 processors through focus group discussions, in-depth interviews, and field observations. The value chain predominantly relies on wild and backyard collection, with limited adoption of cultivation and maintenance practices. Key actors include growers, collectors, processors, and traders, with minimal organized networks. Statistical analysis revealed significant differences in knowledge levels ($p < 0.003$), particularly in value addition, end-market expectations, grading, pricing, and record-keeping. Value addition is predominantly carried out by processing companies, while fewer than 20% of growers and collectors participate in such activities. Economic analysis highlighted inefficiencies, including seasonal production peaks, high transportation costs, and reliance on intermediaries. Profit-sharing disparities across the chain were also significant. Inconsistent pricing, limited market access, and high post-harvest losses due to limited proper storage facilities reduce profitability.

Keywords*: economic performance, information flow, knowledge flow, Monaragala District, wood apple value chain*

Exploring Smallholder Vegetable Farmers' Adaptation Strategies to Climate Change: Insights From Farmers in Balangoda Divisional Secretariate (DS) Division in Sri Lanka

PKDHS Alahakoon*, KWR Himara, NP Kuruppu, UBE Sasanka, SHP Malkanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

**hansisachithra99@gmail.com,*

Climate change poses significant threats to the environment, global economies, and human society. Its impacts are particularly severe for smallholder farmers in developing countries, who face increased vulnerability due to limited resources, environment-sensitive agricultural practices, and inadequate access to smart technologies. According to Adaptation Theory, these farmers develop strategies to cope with climate-related challenges. This study explores the adaptation strategies employed by smallholder vegetable farmers in Sri Lanka to respond to climate change. Qualitative research was conducted with 22 smallholder farmers cultivating beans, chili, tomato, and okra in the Balangoda Divisional Secretariat area employing a convenient sampling technique to ensure easy access to farmer respondents. Semi-structured interviews were used to assess farmers' perceptions of climate change impacts on their agricultural practices and their adopted strategies. Data was analyzed using thematic analysis. The sample consisted predominantly of male farmers (81.8%), with 90% having over 15 years of vegetable cultivation experience. All participants (100%) reported noticeable changes in rainfall, wind patterns, and temperature over the past decade, with abnormal droughts and landslides contributing to yield reduction. Farmers identified frequent changes in weather patterns as a significant challenge to their agricultural activities. In response, all farmers (100%) employed climate-adaptive practices such as adjusting planting dates, managing water resources, implementing soil conservation techniques, and selecting climate-resilient crops. However, despite these efforts, all farmers acknowledged that their strategies were basic and that more advanced adaptation methods could yield better results. Additionally, 72.7% of the farmers expressed a willingness to adopt climate-smart agricultural practices within the next two years, provided they have access to improved resources and advanced technologies. The findings indicate that while smallholder farmers are already adapting to climate change, there is a need for greater support in terms of resources and technology. These findings underscore the need for targeted interventions to boost smallholder farmers' resilience by combining climate-smart practices with local knowledge.

Keywords: *adaptation strategies, adaptation theory, climate change, smallholder farmers, Sri Lanka*

Effectiveness of The Minus One Element Technique (MOET) in Identifying Limiting Nutrients of the Paddy Fields in Low Country Wet Zone, Sri Lanka

RGG Rathnathilaka[1*], WRKDWKV Wickramasinghe[2] and GEM Wimalasiri[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Rice Research & Development Institute, Batalagoda, Sri Lanka*

[*]gaganathara97@gmail.com

Laboratory soil analysis is an effective method for identifying soil nutrient content, but it is often expensive and complex. The Minus One Element Technique (MOET), developed by the International Rice Research Institute (IRRI), provides an alternative approach. In this study, ten soil samples from different locations in the Low Country Wet Zone, Sri Lanka, were analyzed. Soil reports included pH, electrical conductivity (EC), available phosphorus (P), available potassium (K), and organic matter content (% OM). Each MOET set consisted of five pots filled with 5 kg of saturated soil, which were kept under flooded conditions for two weeks. Subjected to five treatments: complete fertilizer (DOA-recommended N, P, and K), minus N (DOA-recommended P and K), minus P (DOA-recommended N and K), minus K (DOA-recommended N and P), and control (no fertilizer). Rice seedlings (cultivar Bw 367) were transplanted, and fertilizer mixtures were applied 14 days after transplanting. Nutrient deficiency symptoms were observed, and plant height, tiller number, and SPAD readings were measured weekly. At 45 days after sowing (DAS), plant fresh weight (FW) and dry weight (DW) were recorded. All data were analyzed using the Statistical Analysis System (SAS) software. The MOET results were used to determine nutrient deficiencies by comparing the observed values with 80% of the complete treatment value. A soil was deemed deficient if the plant DW in a treatment was less than 80% of the DW in the complete treatment. Soil laboratory analysis revealed eight locations deficient in P and all locations deficient in K, while visual observations indicated P and N deficiencies at two locations. MOET results showed nine locations deficient in P, three in K, and four in N. While MOET identified P deficiency consistent with soil reports, it differed significantly for K deficiency. Further comparative evaluation of MOET and traditional soil analysis is recommended to validate the technique.

Keywords*: minus one element technique, nutrient deficiency symptoms, soil nutrient status*

Assessing Farmers' Awareness, Attitude, Utilization and Effectiveness of Indigenous Pest Control Practices in Ibbagamuwa, Kurunegala District, Sri Lanka

RMKD Rathnayake*, PKTM Dharmasena, NMHI Nayakarathne, WMAUKM Wijesekara

Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*rmkdrathnayaka@std.agri.sab.ac.lk

Agricultural practices are important for rural livelihoods in developing countries like Sri Lanka, where farming ensures food security. Indigenous practices, rooted in sustainability and adaptability, address challenges like pests, climate change, and resource scarcity. This study assesses farmers' awareness, attitude, and utilization of these practices in the Ibbagamuwa secretary division, Kurunegala District. Data were collected using a self-administered questionnaire from 61 simple randomly selected farmers, and descriptive statistics were used for analysis. As per the results, a demographic analysis revealed that the predominant group (70%) is male farmers. Most of them (70%) have over 10 years of agricultural experience (50%). Most farmers (55.9%) operate small-scale farms (<1 acre) and they cultivate rice (75%), vegetables (55%), and coconut (53.3%). Importantly, 45% of respondents reported employing traditional practices, such as crop rotation, intercropping, and the use of herbal extracts namely neem (40%), tobacco (8.3%), and citrus to combat pests like stem borers, brown planthoppers, and flies. Findings indicate that 76.7% of participants are familiar with traditional pest control strategies, while 75% of them actively used those strategies. These findings indicate that 26.7% of respondents deem these practices ineffective, while 41.7% assess them as moderately effective. According to the study, challenges to the wider adoption of indigenous knowledge include limited effectiveness of them (60%), labour intensity (41.7%), and time consumption (50%). Despite these obstacles, traditional methods are valued for their cost-effectiveness (70%) and environmental sustainability (65%). The majority of farmers (86.7%) express interest in participating in workshops to enhance their knowledge and skills. The research underscores that farmers possess a moderate level of awareness and attitude toward Indigenous agricultural practices, which are primarily utilized by smallholders with moderate effectiveness in pest controlling among these indigenous practices. Challenges such as limited effectiveness, labour intensity, and time consumption exist these practices are valued for their environmental sustainability and cost-effectiveness, highlighting their potential for supporting sustainable agricultural development.

Keywords: *agriculture, farmers' attitude, indigenous practices, pest management, sustainability*

Influence of Soil Type & Organic Matter Content on Root–Knot Nematodes (*Meloidogyne* spp.) Population Development in Tomato

RTN Abeykoon[1], KMDWP Nishantha[2*] and MLMC Dissanayake[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Horticultural Crop Research and Development Institute, Gannoruwa, Peradeniya, Sri Lanka*

[*]wpnishantha@yahoo.com

Root-knot nematodes (*Meloidogyne* spp.) are major soil-borne pathogens causing severe losses in tomato cultivation in Sri Lanka. While nematode management is well-studied, limited research exists on the interaction between soil properties and nematode development, particularly organic matter content. This study evaluated the effects of eleven soil types and organic matter content on nematode populations in tomato cultivation. Three-week-old KWR variety seedlings were transplanted into pots filled with different sterilized soil types. Each plant was inoculated with 500 second-stage juveniles one week after transplanting. Plants were watered daily, and growth parameters including plant height, fresh and dry shoot weight, and fresh root weight were recorded. Seven weeks post-inoculation, root knots, egg masses, and root galling index were assessed. Soil parameters measured included pH, electrical conductivity (EC), phosphorus (P), potassium (K), and organic matter content. Results showed significant differences in nematode populations across soil types. The highest populations were in Reddish Brown Earth (RBE-WD) (root galling index 4, 25 root knots, 8 egg masses), associated with high P and K, and low pH, EC, and organic matter. Low Humic Gley soil had the lowest nematode population (root galling index 1, 2 root knots, no egg masses) due to high pH, EC, and organic matter and low P and K. Regression analysis showed positive correlations between nematode populations and P and K, and negative correlations with pH, EC, and organic matter. Plant growth parameters were largely unaffected by soil type, though variations in shoot height and root/shoot weights were observed. The highest shoot height (54 cm) occurred in Low Humic Gley soil. Organic matter had a significant negative correlation with nematode populations, suggesting its potential for nematode management in tomato cultivation.

Keywords: *Meloidogyne spp., nematode population, organic matter, soil type, tomato*

Early Selection of *Hevea brasiliensis* Promising Genotypes from 2016 Hand Pollination Progeny by Using Morphological, Physiological, and Molecular Parameters

KS Sepali[1], SP Withanage[2*], JBDAP Kumara[1], PWM Tharindi[1], KVVS Kudaligama[2], TD Waduge[2], NPSN Karunarathne[2]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Rubber Research Institute, Dartonfield, Agalawatta, Sri Lanka*

[*] Pamuditharama@yahoo.co.uk

The conventional breeding cycle of 20–25 years in Rubber (*Hevea brasiliensis*) presents significant challenges, including poor clonal balance, reduced genetic diversity, and limited availability of new clones. To address these issues, early selection of high-yielding rubber clones with desirable secondary traits is essential for accelerating the breeding cycle and enhancing selection precision. This research aimed to integrate morphological, physiological, and molecular data for the early identification of superior genotypes from 2016 hand-pollinated (HP) progeny, facilitating a more efficient and targeted breeding approach. Morphological traits, including girth, bark thickness, yield and leaf area were analyzed using Principal Component Analysis (PCA) and hierarchical clustering. Cluster analysis grouped 73 genotypes into two clusters, with cluster 2 containing high-performing genotypes. Physiological traits, including total volume, dry rubber content, total solids content, sucrose, inorganic phosphorous content and thiol content were analyzed for top-performing genotypes. Combined morphological and physiological data were further analyzed, with PCA where cluster analysis grouped genotypes into two distinct clusters. The high performing (cluster 2) shows only one genotype (HP120). Among these, five genotypes were selected based on the combination of morphological and physiological cluster analysis for the molecular analysis with 10 SSR markers. UPGMA dendrogram revealed two distinct genetic clusters with HP120 and HP 117 being closely related. However molecular clustering did not align with morphophysiological clusters indicating limited compatibility between phenotypic and genotypic data. The lack of compatibility between molecular and morpho-physiological data may be attributed to the influence of environmental factors on phenotypic traits, and the limited number of SSR markers used. This integrative approach laid a strong foundation for rubber breeding programs by emphasizing the need for both phenotypic performance and genetic diversity.

Keywords: *breeding cycle, genetic diversity, rubber*

Evaluation of Root & Shoot Characteristics of F_5 Rice Lines in Lower Catena Soils in Low Country Wet Zone of Sri Lanka

MGDA Nanayakkara[1*], MC Millawithanachchi[2] and AD Ampitiyawatta[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

[2]*Rice Research Station, Labuduwa, Sri Lanka*

[*]dularagamage981@gmail.com

The Wet Zone accounts for 12% of the rice-growing area in Sri Lanka. Although the Wet Zone has abundant water from rainfall, irregular patterns and intensity of rainfall cause problems such as accumulated surface water, producing anaerobic conditions, poor drainage, nutrient imbalance and iron toxicity. To address these challenges and ensure a high rice yield for the nation, cultivating rice varieties with favorable yield parameters is crucial. Therefore, studying shoot and root morphology and their contributions to the final yield is essential for developing rice varieties well-suited to the Wet Zone conditions of Sri Lanka. This study attempted to evaluate the root and shoot morphology of F5 lines of six rice crosses under lower catena and to identify better root and shoot characteristics. Thirty-five lines from the F4 generation, 12 parental lines, and three standard checks were evaluated using two lines per each with two replicates. At the maturity stage, plant height, culm height, flag leaf length and width, effective and non-effective tillers, shoot dry weight, panicle length, filled and unfilled seed counts, thousand-grain weight and root measurements (volume, width, length, dry weight) were recorded. One–way ANOVA, Duncan Multiple Range Test, and Pearson Correlation test were used to analyze the collected data. The Pearson Correlation test highlighted that there are some significant, positive correlations between total panicle weight and root volume ($r = 0.644$), root dry weight ($r = 0.464$), and root width ($r = 0.504$) respectively. This implies that the overall root growth has a positive impact on improving rice yield. Shoot dry weight strongly correlates with panicle weight ($r = 0.860$), showing high shoot biomass boosts yield. Based on mean separation and the Duncan grouping, cross 03 and 06 were found to be the best crosses while rice line L14, performed well in the lowland conditions for shoot, root and yield characters.

Keywords: *F5 generation, lowland conditions, rice, root development*

Evaluation of Selected Rice (*Oryza sativa* L.) Lines for Submergence and Salinity Tolerance at the Seedling Stage

UKT Malsha[1*], MC Millawithanachchi[2] and JBDAP Kumara[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Rice Research Station, Labuduwa, Sri Lanka.*

[*]uktirunimalsha@gmail.com

Paddy fields close to river basins of the southern coastal belt of Sri Lanka are subjected to alternating stresses of salinity and submergence within the same cropping season. These floods, during heavy monsoonal rains and seawater intrusion, during high tides, lead to physiological and biochemical changes in rice plants. To enhance rice production in low-lying areas, varietal improvement programs were set by focusing on submergence and salinity tolerance. This study aimed to screen selected rice lines for tolerance to submergence and salinity at the seedling stage under controlled environment conditions at Rice Research Station, Labuduwa during 2024/25 Maha season. The evaluation process was conducted into two phases: a preliminary screening and a repeated trial. In the preliminary trial, submergence tolerance was evaluated by submerging 5-days-old seedlings in a submergence tank where water level maintained at a 1m for 12 days. Salinity tolerance was evaluated by exposing 18-days-old seedlings to a salt solution with an electrical conductivity of 12dS/m for 7 days. Plant height and visual observations were measured to identify promising lines. Based on the preliminary screening, 13 rice lines were selected for repeated trials to validate the results. These lines were subjected to the same submergence and salinity stress conditions, with monitoring of plant height, survival count, root dry weight and shoot dry weight. Data analysis was conducted using Kruskal Wallis test and ANOVA, with mean separation performed through Duncan's Multiple Range Test. Rice lines Ld 20-11-2, Ld 20-13-7 and Ld S2B7 had been identified as the tolerant varieties for alternative submergence and salinity stress conditions according to survival percentages.

Keywords**:** *rice lines, salinity, submergence, survival*

Modification of Some Selected Agronomic Practices to Enhance the Productivity and Quality of Hybrid Capsicum (*Capsicum annum* L.) Variety 'Prarthana'

PBNM Wimalarathne[1*], TK Illangakoon[2] and AD Ampitiyawatta[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Horticultural Crops Research and Development Institute, Gannoruwa, Peradeniya, Sri Lanka*

[*]pbnirosham98@gmail.com

'Prarthana' is the first locally developed F1 hybrid capsicum variety in Sri Lanka. Most of the farmers prefer to cultivate imported hybrid capsicum varieties such as Muria 358 F1 due to the lower average yield and lower quality of Prarthana compared to imported hybrid capsicum varieties. Therefore, this study was conducted to evaluate the effect of incorporation of UV-treated polymulch, High Density Planting (HDP) and Partially Burnt Paddy Husk (PBPH) on the productivity and quality of the variety Prarthana. The experiment was laid out in a Randomized Complete Block design with three replications. The eight treatment combinations were comprised of recommended spacing (40cm×40cm) and HDP (40cm×30cm) with Silver on Black UV-treated polymulch or/and PBPH. Recommended spacing without UV-treated polymulch and PBPH was the control. Yield, number of fruits/ plant, growth parameters (plant height, days to 50% flowering), fruit characters (fruit length, weight and diameter), quality parameters (pericarp thickness, shelf life after harvest, total soluble solids (TSS), acidity), bacterial wilt and leaf curl virus diseases occurrence were evaluated. Recommended spacing and UV-treated polymulch exhibited a significantly higher yield, higher number of fruits/plant and lesser number of days to 50% flowering. UV-treated polymulch exhibited a significantly lower weight loss percentage in shelf life after harvest at room temperature and significantly lower plant height at 2WAP. Fruit characters (fruit length, weight and diameter), and quality parameters (pericarp thickness, shelf life after harvest in refrigerator, total soluble solids (TSS), acidity) did not exhibit significant differences with the three factors. Bacterial wilt and leaf curl virus disease occurrence did not exhibit significant differences under these treatments. This study concludes that recommended spacing with UV-treated polymulch can be used to obtain high productivity of the variety Prarthana with better shelf life at room temperature.

Keywords: *high density planting, partially burnt paddy husk, UV-treated polymulch*

Impact of Salicylic Acid and Calcium Nitrate as Integrated Pest Management Components for the Management of Sucking Vectors in Capsicum

KVAL Gunawardhana[1], KMDWP Nishantha[2]* and MLMC Dissanayake[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Horticultural Crops Research and Development Institute, Gannoruwa Road, Peradeniya*

*wpnishantha@yahoo.com

Sucking vectors like whiteflies, thrips, and mites pose significant challenges in capsicum (*Capsicum annuum*) cultivation in Sri Lanka, causing direct damage and transmitting plant pathogens. The study evaluated the potential of salicylic acid (SA) and calcium nitrate ($Ca(NO_3)_2$) as Integrated Pest Management (IPM) components to address key gaps in nutrient-based pest resistance, vector-specific management and integrated approaches. SA induces systemic acquired resistance (SAR), while $Ca(NO_3)_2$ fortifies cell walls. A randomized complete block design (RCBD) with six treatments was used: SA seed treatment + SA foliar application (T1), SA soil application (T2), $Ca(NO_3)_2$ foliar application (T3), single plant covering + pesticides application (T4), Thiamethoxam 70% (w/w) WS seed treatment + pesticides application (T5), and a control (T6). Weekly pest counts were recorded from three randomly selected leaves per plant, taken from the same randomly selected plant per plot. The severity of sucking pest infestation, plant height, and harvest indices were monitored. Statistical analysis was done using ANOVA and the Kruskal-Wallis test. Results demonstrated that T4 was the most effective, achieving the highest plant height (84.6 cm, $p < 0.0001$) and the lowest pest severity (11.98, $p < 0.0001$). T1 (26.59), T2 (27.79), and T3 (29.56) demonstrated moderate pest suppression, with plant heights of 59.6 cm (T1) and 55.5 cm (T3). T4 also recorded higher pod weights (2450.6 g, $p < 0.05$) than T1 (1601.6 g) and T3 (1429 g), though differences in the number or weight of mite-damaged pods were not significant ($p > 0.05$). The findings highlight the effectiveness of single plant covering with pesticides (T4) as the most effective vector management strategy. Foliar applications of SA and $Ca(NO_3)_2$ provided moderate pest suppression and improved crop performance, indicating their potential in IPM. Future studies should explore combining these treatments with other methods to enhance plant immunity while reducing pesticide reliance.

Keywords: *calcium nitrate, capsicum, salicylic acid, single plant covering, sucking pest comple*

Pathogenic diversity and molecular characterization of *Xanthomonas oryzae* pv *oryzae* (Xoo), the causal agent of Bacterial Leaf Blight (BLB) of rice in selected locations of Sri Lanka

DAKC Dheerasinghe[1], C Ranasinghe[2]*, MLMC Dissanayake[1]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Rice Research and Development Institute, Batalagoda*

*chithranir@yahoo.com

Bacterial leaf blight (BLB) caused by *Xanthomonas oryzae* pv. *oryzae* (Xoo) is a major disease of rice (*Oryza sativa*) in Sri Lanka. Pathogenicity of this highly adaptable pathogen helps determine its impact on crops. Given Sri Lanka's diverse agroclimatic zones, different pathotypes may emerge. Comprehensive studies across agroclimatic zones are still lacking. Varied conditions could lead to unique Xoo pathotypes, making thorough investigation essential. Understanding this diversity helps effective, targeted disease management strategies, develop resilient rice varieties, and reduce the impact of BLB. The main objective of the research is to determine the pathogenic diversity of pathogen (Xoo), from selected agricultural areas in the country, with molecular characterization of selected isolates as a specific objective. The research was conducted at the Rice Research and Development Institute, Batalagoda. The pathogenicity test was performed in a plant cage. Bacteria samples were collected from infected plants in different locations. Pathogen was primarily identified based on symptoms, following the International Rice Research Institute and pathogen diagnostic datasheet guidelines. Samples were cultured on nutrient agar, and transferred to selective media for differentiation and pure culture preparation. Colony morphology data and microscopic images were obtained. Confirmation of the pathogen and pathogenicity were tested with inoculating to standard susceptible variety (TN1) 30–45-day-old plants. Lesion lengths were measured 21 days after inoculation, and data were analyzed. For molecular identification, DNA was extracted with CTAB method and PCR was performed with specific primers. The pathogenicity test results showed ideal symptoms for BLB in all 31 isolates. The pathogenic and morphological analysis showed 19 distinct groups. In PCR the tested samples showed bands for bacterial-specific primers and supported identification. Additionally, some isolates showed cyanobacteria or algae, which may affect pathogenicity. In conclusion, the pathogen (Xoo) exhibits varied pathogenicity locally, providing key insights for resistant gene research for virulent strains.

Keywords: *bacterial leaf blight of rice (BLB), pathogenicity, rice, Sri Lanka, Xanthomonas oryzae pv oryzae (Xoo)*

Efficacy of Artemisia (*Artemisia abrotanum* L.) Plant Extract in Controlling Two-Spotted Spider Mites (*Tetranychus urticae* Koch)

SMBRKS Srinarayene[1*], WMAUKM Wijesekara[1] and WWMBPB Weerasinghe[2]

[1]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Ceylon Foliage Pvt. Ltd, Boralanda, Sri Lanka*

[*]smbrkssrinarayene@std.agri.sab.ac.lk

The two-spotted spider mite (*Tetranychus urticae* Koch) is a major pest in ornamental crop production, causing significant economic losses. As sustainable pest management becomes increasingly important, this study investigates the potential of *Artemisia abrotanum* extracts as an eco-friendly alternative for mite control. The primary objective was to assess the efficacy of hydro-distilled *A. abrotanum* extracts from leaves, stems, and their combination at different concentrations in an *in vitro* setting. A completely randomized design was used to conduct mortality tests with 11 treatment groups. Extracts at concentrations of 6×10^{-2} kg m^{-3}, 9×10^{-2} kg m^{-3}, and 12×10^{-2} kg m^{-3} were tested, alongside a commercial insecticide (Insecta at 0.75×10^{-3} kg m^{-3}) an "Insecta only" treatment, and a control. Each treatment was replicated three times. Mite mortality rates were recorded at 2, 6, 24, and 48 hours post-exposure, with results corrected using Abbott's formula to account for natural mortality. Statistical analysis revealed that mortality was plant part-concentration- and time-dependent. The combination of leaves and stems at the highest concentration (12×10^{-2} kg m^{-3}) demonstrated the greatest efficacy. When combined with Insecta, this treatment significantly increased mite mortality ($p < 0.0001$) compared to the control. After 48 hours, the highest mortality rates occurred in the 12×10^{-2} kg m^{-3} leaves + stems treatment. These findings highlight the potential of *A. abrotanum* extracts, particularly from combined plant parts at higher concentrations, as an effective method for controlling two-spotted spider mites. Future research involving *in vivo* field trials and phytochemical analyses are recommended to evaluate the extracts' full efficacy and safety before practical application in ornamental crop production.

Keywords: *Artemisia abrotanum, eco-friendly pesticides, ornamental crops, pest control, Tetranychus urticae, two-spotted spider mite*

Evaluating the Impact of the Different Slaughtering Ages of Broiler Chicken on Physiochemical Characteristics and Quality of the Meat

BBK Perera* and DNN Madushanka

Department Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

bimashakavindi98@gmail.com

This study investigates the effects of different slaughter ages (29, 32, 35, 38, and 42 days) on carcass traits and the physicochemical properties of Ross 308 broiler chicken meat. The evaluated carcass traits include live weight, carcass weight, chilled weight, carcass rate, carcass yield, giblet yield, breast yield, drumstick yield, and wing yield. There were 5 replicates and 10 broiler birds per replicate used. The physicochemical properties assessed in breast fillet samples were pH, moisture content, drip loss, and meat color (L*, a*, and b* values). Statistical analysis was performed using one-way ANOVA with SAS version 9.0. The results revealed no significant effects ($P > 0.05$) on carcass rate, wing yield, moisture content, or the b* value of meat color. However, significant differences ($P < 0.05$) were observed in carcass yield percentage, giblet yield percentage, breast yield percentage, drumstick yield percentage, drumstick and thigh bone lengths, meat pH, drip loss percentage, and meat color (L* and a* values). The findings suggest that the optimal slaughter age for broiler chickens lies between 35 and 38 days. Broilers slaughtered at 35 days demonstrated high yield efficiency, while those slaughtered at 38 days exhibited superior physicochemical properties, particularly in breast meat and bone development. Although slight improvements in drumstick and thigh bone lengths were observed beyond 38 days, the increased feed cost outweighed the benefits. Therefore, the study concludes that slaughtering broilers between 35- and 38 days balances cost-effectiveness, yield, and meat quality.

***Keywords**: broilers, carcass rate, carcass yield, giblet yield, slaughtering age*

Influence of Cleaning Methods on Hatchability of Floor Eggs and Chick Quality of Cobb 500 Broilers

AN Sewwandi* and DNN Madushanka

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ansewwandi@std.agri.sab.ac.lk

The development of superior day-old chicks, especially from Cobb 500 broiler breeders, is a major focus of the current poultry industry. However, hatchability and chick quality are vulnerable to floor eggs, which are frequently contaminated due to their contact with dirty environments. By contrasting dry cleaning with tissue paper and cleaning with wire mesh, this study examines how cleaning techniques affect floor eggs and evaluates their impacts on hatchability and chick quality compared to nest eggs as a control. A total of 900 eggs (average weight = 42.74±0.13g) were collected from 30-weeks-old Cobb 500 broiler breeders. They were categorized into three groups: nest eggs, dry-cleaned floor eggs, and wire-mesh-cleaned floor eggs, with three replicates per group (Each replicate consisted of 100 eggs and used Completely Randomized Design). The eggs were incubated in a Petersime multi-stage incubator in standard settings. Early embryonic mortality, hatchability, and chick quality metrics like weight and physical state were evaluated. The results showed 89%, 88%, and 83.67% hatchability for the control samples, dry tissue paper cleaning and wire mesh cleaning, respectively. With that, nest eggs produced better results. Unlike nest eggs, wire mesh cleaning had lower hatchability (83.67%) (P value=0.0127) but substantially eliminated contamination. According to cleaning methods, Pasgar scoring (P value=0.4013) and chick weight (P value=0.25) did not affect chick quality. However, chick length was affected by ($P<0.05$) the cleaning methods. (18.69 cm, 18.36 cm, and 18.26 cm length, respectively, to nest eggs, dry tissue paper cleaning method, wire mesh cleaning method.) Metrics for hatchability and chick quality were further enhanced by wire mesh cleaning. The study emphasizes how important it is to use efficient egg-cleaning techniques to reduce the danger of contamination and improve incubation results. This study emphasizes the significance of efficient floor egg cleaning procedures and provides valuable suggestions to enhance hatchery productivity and chick survival.

Keywords: *Cobb 500, floor eggs, hatchability, incubation parameters, nest eggs*

Occurrence of Pale Soft and Exudative (PSE) Meat and Determination of Physical Characteristics in Broiler Chicken Meat in a Commercial Processing Plant

HI Chathurika[1*], TSP Jayaweera[1], HDS Dharmasiri[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Weehena farm, Ihala Mahawewa*

*hichathurika@std.agri.sab.ac.lk

Pale Soft and Exudative (PSE) condition is a functional defect that affects the quality of meat because of its pale color, soft texture and low water holding capacity, which results in consumer dissatisfaction and economic loss. The study was conducted to determine the occurrence of PSE in broiler chicken meat in a leading commercial meat processing plant and to compare the physical characteristics (color, pH, Water Holding Capacity (WHC), drip loss, cooking loss) of PSE broiler chicken meat with normal broiler chicken meat. Fifty broiler chicken breast fillet samples (31.3g ±3.8) were used in the study and the L* (lightness), a* (redness), and b* (yellowness) values were measured using a portable colorimeter. When the L* of the fillets was ≥49, they were considered pale. Of those samples, 10 fillets with normal color and 10 fillets with a pale color were assessed for WHC, pH, drip loss, and cooking loss. The study found that 78% of broiler chicken meat samples were PSE and that PSE fillets were ($p \leq 0.05$) lighter (52.58 ± 0.33). The pH and the WHC were ($p < 0.05$) lower while the drip loss and the cooking loss were higher ($p < 0.05$) in PSE meat. The findings of the study revealed a higher occurrence of PSE meat in commercial meat processing plants and showed that an economic loss could be expected because of the significantly higher cooking loss and low WHC in PSE broiler chicken meat.

Keywords: *broiler meat, cooking loss, drip loss, PSE, water holding*

Assessment of Fenbendazole Efficacy in a Selected Goat Farm and Farmers Awareness on Caprine Nematode Control in Central Province in Sri Lanka

MMF Muhmina[1]*, NDS Dissanayaka[2] and MPS Magamage[1]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Veterinary Research Institute, Gannoruwa, Peradeniya, Sri Lanka*

*mmfmuhmina@std.agri.sab.ac.lk

Goat farming plays a vital role for small-scale livestock farmers in Sri Lanka, offering key resources like meat, milk, hide and manure. However, gastrointestinal nematode (GIN) infections pose a major challenge, threatening goat health and productivity. The imprudent use of anthelmintics has led to increasing resistance for these parasites in goats. The objective of this study was to evaluate the potential resistance and efficacy of Fenbendazole, a widely used anthelmintic, in controlling GIN infections and to assess farmers' knowledge, attitudes, and practices regarding anthelmintic use in the Central province of Sri Lanka. A Fecal Egg Count Reduction Test (FECRT) was conducted on a semi-intensively managed farm in Matale District (Dambulla) with twenty Jamunapari crossbred goats (n=20) aged 4–36 months. Animals were categorized and divided into two groups based on age, weight and fecal egg counts were checked in treatment and control groups. In the selected farm for this study, the fecal egg count (EPG) of animals was found to be 200 or higher, indicating a high burden of infestation. The treatment group received Fenbendazole (100mg/ml) at a rate of 5mg/kg body weight orally, while the control group remained untreated. Fecal samples were analyzed using the modified McMaster technique to determine egg count per gram of feces (EPG) immediately prior to treatment and 14 days post-treatment. A survey was conducted among 102 goat farmers in 10 veterinary ranges in the Kandy district to assess farmers' practices and awareness regarding deworming of goats. FECRT results of the treatment group were significantly ($p<0.05$) different from those of the control group. The results showed that Fenbendazole achieved a 92.17% efficacy rate in the treatment. The survey revealed that while 67.65% of farmers understand the importance of deworming, but majority of the farmers (93%) were unaware of anthelmintic resistance in goats. In conclusion, the goats selected for the current study were not resistant to Fenbendazole, demonstrating its effectiveness in controlling Caprine GIN infections under field conditions. It is essential to continue raising farmers' awareness about anthelmintic resistance to ensure sustainable and effective parasite management.

Keywords*: anthelmintic resistance, fecal egg count reduction test, fenbendazole, gastrointestinal nematode, goat farming*

Exploring the Yoghurt Consumption Pattern among University Undergraduates in Western Province Sri Lanka

MGSR Kariyawasam[1*], JTS Gamage, HAKT Wijesinghe, and TSP Jayaweera

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

[*]mgsrkariyawasam@std.agri.sab.ac.lk

Yoghurt is rich in calcium, protein, probiotics, and B vitamins, making it an important food for youth by providing various health benefits. This study aimed to assess yoghurt consumption behaviour, knowledge of its nutritional benefits, and barriers to its consumption among university undergraduates in the Western province of Sri Lanka. The study was conducted from February to May 2024 and the data were collected from 426 university undergraduates representing multi-disciplinary streams, using a structured questionnaire through the convenience sampling method. Descriptive statistics were used to analyse data. The study revealed that 46.5% of the participants consumed yoghurt 1 to 2 times a week and the preferred type of yoghurt was set (58.2%) or drinking yoghurt (46.7%). Taste (73.2%) and texture (61.3%) were identified as the major factors that made the difference in the choice of yoghurt. Yoghurt was used mainly (77%) as a dessert and the majority (88.5%) of the participants were aware that yoghurt contains probiotics and calcium. Out of the respondents, 65.5% and 37.8% expected that yoghurt consumption provided better digestion and enhanced immunity. It was revealed that the majority of the respondents (58.2%) do not compare their yoghurt intake with the recommended dietary guidelines, and the majority (73.9%) of those who compare fall short of the recommendations. Participants understood the benefits of yoghurt for specific health conditions, such as digestion (65.5%), bone health (34.5%), and weight management (27.9%). The majority (71.6%) of the respondents viewed yoghurt as being useful in managing certain health conditions. The results indicated that most undergraduates of the Western province are aware of the health benefits of yoghurt and are willing to include it in their diet. Barriers such as high cost (63.4%), availability (35%), and taste preferences (58.9%) still limit its consumption.

Keywords: *consumption pattern, nutritional awareness, university undergraduates, yoghurt*

Factors Affecting Meat Consumption Patterns Among Undergraduates of the Faculty of Agricultural Sciences of Sabaragamuwa University of Sri Lanka

RDNS Jayawardana*, GRHP Gamlath, AA Madushani, HMML Chandrasena, MATS Munasingha and TSP Jayaweera

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*rdnsjayawardana@std.agri.sab.ac.lk

Protein intake is an essential component of a balanced diet. Meat is considered as a diet rich in animal protein. However, meat consumption patterns are influenced by various factors. A study was conducted among undergraduates at the Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka from April to December 2024, aiming to examine the meat and meat products consumption pattern together with the factors influencing them. Data were collected from 322 undergraduates of the faculty representing all the academic years, using a structured questionnaire on types and frequency of meat consumption, purchasing preferences and attitudes toward meat intake and results were analyzed by using SPSS statistics. According to the results, 96.9% of respondents consumed meat and all of them consumed broiler chicken meat. Consumption of beef, pork, and mutton among the respondents was found as 73.9%, 65.5%, and 74.5% respectively. Cultural and religious factors, affordability, and accessibility have been identified as primary factors affecting meat consumption. Fresh and raw meat were strongly preferred (73.9%) over frozen, chilled, and processed meat due to perceptions of quality and taste. It was revealed that 85% of respondents considered that meat consumption is beneficial for their health. Sausages, meatballs, nuggets, ham, and bacon represent the major portion of processed meat products. Sausages show the highest portion (70.2%) in consumption among undergraduates. Undergraduates who consume processed meat are also aware of its health risks and consume those foods due to their convenience and taste. The findings highlighted the fact that meat consumption among Agricultural undergraduates remains satisfactory, but meat type diversification is required. It is recommended to initiate nutrition awareness promotion programs in relation to meat consumption and to improve facilities for affordable access to different types of meat within the university premises.

Keywords: *cultural influences, dietary patterns, meat consumption, protein intake, undergraduates*

Food Consumption Pattern of the Elderly Population in Pambahinna

PAM Pathmasiri*, KGSS Premarathna, SDS De Silva, HDSH Jayarathna, KDCW Kottapola and TSP Jayaweera

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ameeshapathmasiri@gmail.com

Dietary habits and nutritional deficiencies are critical challenges among the elderly population in Sri Lanka. This study assessed the food consumption patterns of randomly selected 100 elderly (age above 60 years) individuals from the Pambahinna area using a structured questionnaire to identify dietary preferences and constraints affecting food consumption patterns. The study revealed that 91% of the elderly population consumed the main three meals daily. The chicken egg was the most preferred egg type of the studied population, with 39% consuming them at least twice a week. Twenty one percent of the elderly population rarely consume quail eggs and none of the individuals in the studied population consume duck or turkey eggs. Among meat, broiler chicken meat was the most preferred type, and it was consumed once in every two weeks by 52% of the population. 31% of the elderly rarely consume beef, 23% pork, 31% mutton and 69% never consume all three types of meat. Fish was consumed weekly by 68% of elderly individuals, while the consumption of shrimp, cuttlefish, and crabs was rare. They have never consumed oysters. Powdered milk was consumed daily by 81%, while other dairy products such as fresh milk, cheese, curd, UHT milk, and yogurt were consumed less frequently. All the participants consumed vegetables daily. Fruits were consumed at least twice a week by 61% and for grains, it was 54%. Tea was the most popular beverage, and it was consumed daily by 98%. Major factors affecting food choices were taste (67%) and nutritional value of the food (57%). Dietary restrictions were due to health conditions led by diabetes and hypertension in 82% of the elderly individuals. These findings highlighted the need for tailored nutritional interventions for the elderly, focusing on dietary diversification, awareness campaigns about protein sources, and enhanced access to nutritious food options to improve their overall well-being.

Keywords: *dietary interventions, elderly population, food consumption patterns, health condition*

Detection of *Campylobacter*, *Salmonella* and *Escherichia coli* in Broiler Chicken Meat Collected from a Broiler Processing Plant in Sri Lanka

GN Athukorala[1*], JLCS Perera[1] and HDS Dharmasiri[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Weehena Farm, Ihala Mahawewa*

[*]gnathukorala@std.agri.sab.ac.lk

Broiler chicken meat constitutes a pivotal component of the Sri Lankan diet. Despite its richness in essential nutrients, meat contamination introduces substantial risks to public health and also causes food spoilage. Foodborne pathogens cause significant public health issues and many foodborne infections worldwide annually. This study aims to investigate the presence of Campylobacter, Salmonella, and Escherichia coli in broiler chicken meat samples collected from a broiler meat processing plant. Samples were collected from three different broiler farms: 02 closed-house and 01 buyback farm. From each farm, 07 skin-on carcasses of Cobb 500 male birds were selected randomly, and two whole chicken carcass swabs were taken from each. A total of 42 swab samples were collected for the isolation of Campylobacter spp., and the rest were analyzed for Salmonella spp. and Escherichia coli. Swab samples were taken from broiler meat whole skin-on carcasses after the evisceration process before chilling. Standard microbiological techniques were performed to isolate and identify the targeted pathogens, including selective isolation, biochemical identification and confirmation. This study revealed the presence of Campylobacter spp., Salmonella spp., and Escherichia coli. All tested samples were positive for Campylobacter spp., (100%). Presence of Salmonella spp., E. coli, Staphylococcus spp., Pseudomonas spp., Citrobacter spp., and Klebsiella spp. was 24%, 38%, 33%, 24%, 14%, and 10% respectively. The findings of this study will provide valuable insights into the poor microbiological quality of broiler chicken meat in broiler processing plant and further need to minimise carcass contamination at the processing level.

Keywords**:** *broiler meat, campylobacter, foodborne pathogens, processing plant*

A Study on the Effect of Cod Liver Supplement on Post-Weaning Conditions in Cross-Bred Calves

PVAN Thavishta[1*], MPS Magamage[1], and MNSN Bandara[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*National Livestock Development Board, Sri Lanka*

*pvanthavishta@std.agri.sab.ac.lk

The post-weaning period, especially within the first 30-45 days after weaning, is considered the most stressful stage of calf development. During this time, calves are adjusting to new diets, environments, and social structures, which can lead to significant physical and psychological stress. This period of stress can impact on their health, performance and overall development, making it crucial for proper management and care to ensure their well-being. This study evaluated the potential use of Cod Liver oil supplementation to mitigate post-weaning stress in crossbred calves. Cod Liver oil is rich in omega-3 fatty acids, vitamins A, D, and E, known to support immunity, reduce inflammation, and promote early growth. Thirty-six (n=36) calves were assigned to three equal groups: control and two treatment groups receiving 10 mL (T1) and 15 mL (T2) of Cod Liver oil daily. Supplementation commenced two weeks after birth and continued for three months. Body weight, body length, height, heart girth, rectal temperature, and visual health scores (cough, Nasal Discharge, eye, ear, and fecal consistency) were monitored weekly. No significant differences ($P > 0.05$) in growth parameters (weight, body length, height, or heart girth) were observed between the control and treatment groups. This suggests that Cod Liver oil supplementation at the administered doses did not significantly impact overall growth performance during the post-weaning period. However, the study identified potential benefits of oral cod liver oil for respiratory health. Both treated groups exhibited a significant reduction in coughing and nasal discharge compared to the control group. In conclusion, Cod Liver oil supplementation might be beneficial for maintaining better respiratory health in calves, even if it doesn't substantially influence overall growth. Further research is needed to explore optimal Cod Liver oil dosages and their long-term effects on calf growth and development.

Keywords: *calf health, cod liver oil, growth performance, post-weaning stress, respiratory health*

Study the Physicochemical and Organoleptic Properties of Ice Cream by Replacing Skimmed Milk Powder with Yam Flour

PMM Sankani[1]*, DD Wickramanayake[1]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

*pmmsankani@std.agri.sab.ac.lk

This study focused on developing an ice cream through a partial replacement of skimmed milk powder with yams to evaluate the physiochemical and sensory properties. T1 = sweet potato yam powder (YPs), T2 = water yam powder (YPw), T3 = five leaf yam powder (YPf), T4 = purple yam powder (YPp) and T5 = lesser yam powder (YPl) were used in different levels (L1=25%, L2 = 50%, and L3 = 75%) in w/w basis and control sample (C) had not included yam powders. (C = 0%). Ice cream mixtures were analyzed for fat, total solids, and acidity. Final products were tested for overrun, melting time, and sensory attributes using a 9-point hedonic scale. Compared with the fat content of C (10.13%), it was high in L1 of YPs (10.13%), YPf (9.86%), YPp (9.46%) and YPl (10.16%). But the fat content was high in L3 of the YPw (10.56%). Total solids content remained relatively unchanged across all the treatments, indicating minimal compositional disruption. Titratable acidity content was high in L1 in all treatments. It was 0.1456% in C, 0.1359% in YPs, 0.1087% in YPw, 0.1090% in YPf, 0.1151% in YPp and 0.1064% in YPl. L1 showed the higher overrun, while the C (36.22%), YPs (30.72%), YPw (28.17%), YPf (28.9%), YPp (28.04%) and YPl (25.16%). Melting time increased across all yam types in L3. C (9.04min), YPs (14.88min), YPw (12.83min), YPf (10.15min), YPp (10.97min) and YPl (16.71min). Sensory evaluation showed that ice cream in L1 achieved the best acceptance among yam-substituted samples, closely resembling the control with only skim milk powder. L3 enhanced colour and texture but negatively impacted taste and mouth feel. It can be concluded that the incorporation of 1.125% yam powder into the ice cream formula maintained the best physiochemical and sensory properties.

Keywords: *ice cream, melting resistance, sensory evaluation, skimmed milk powder, yam powder*

Effect of Spice Extracts on Rancidity, Antimicrobial and Organoleptic Properties of Butter

KWKD Maduwanthi[1]*, DD Wickramanayake[1] and NT Liyanagamage[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Richlife Dairies Limited, Wadduwa, Sri Lanka*

[*]kwkdmaduwanthi@std.agri.sab.ac.lk

This study assessed the effect of commercially available spice extracts of clove, cinnamon, nutmeg, ginger and pepper at a concentration of 0.05 % on the antioxidant, antimicrobial and organoleptic properties of unsalted butter. The Free Fatty Acid (FFA) value and Peroxide Value (PV) of spice extracts infused butter were significantly lower ($p < 0.05$) than those of the control (T0: FFA 0.68 ± 0.04 %, PV 4.29 ± 0.09 mEq kg^{-1}) during the four weeks of storage period. Clove infused butter exhibited the lowest FFA (0.50 ± 0.05 %) on day 13 and PV (0.96 ± 0.12 mEq kg^{-1}) on day 30. Cinnamon recorded the second lowest FFA (0.54 ± 0.05 %) and PV (1.09 ± 0.10 mEq kg^{-1}) followed by Nutmeg (T3) and Ginger (T4), while pepper (T5) had the highest FFA and PV. Furthermore, clove-infused butter maintained the lowest Total Plate Count (2.6×10^2 CFU g^{-1} on day 14), significantly lower ($p < 0.05$) than the control (2.53×10^3 CFU g^{-1}). By day 14, no yeast or mold growth was observed in clove, cinnamon, and nutmeg treatments whereas the control displayed microbial contamination by day 07. Sensory evaluations indicated that clove-infused butter received significantly higher scores for overall acceptability, making it the most preferred treatment. The second phase of the study aimed to optimize the levels (0.025 %, 0.05 %, 0.075 %, and 0.1 %) of clove extract for butter stability. Higher concentrations (0.075 % and 0.1 %) significantly decreased microbial growth but led to lower sensory scores. In conclusion, the 0.05 % concentration of clove extract effectively inhibited microbial growth while preserving desirable organoleptic quality, making it the optimal concentration for balancing stability and acceptability. These findings suggest clove extract as a promising natural preservative in butter, offering a substitute for synthetic preservatives. Further researches are needed to identify the bioactive compounds that cause these effects and the potential of spice combinations in controlling rancidity.

Keywords: *antimicrobial, butter, clove, rancidity, sensory properties*

Impact of Reproductive Tract Scoring (RTS) on Assessing the Fertility and Open Period of Holstein Friesian Dairy Cows in Upcountry Dairy Farms in Sri Lanka

IAM Samarakkodi[1*], MMP Sumith[1] and MVR Jayawardhana[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Bopaththalawa NLDB Dairy Farm, Sri Lanka*

[*]iamsamarakkody@std.agri.sab.ac.lk

Efficient reproduction is a cornerstone of profitability in the dairy industry, yet declining reproductive performance remains a significant challenge. Timely determination of fertility and effective interventions provide key strategic options for reproductive management in dairy herds. Reproductive tract Scoring (RTS) also known as the reproductive tract size and position score (SPS) is a management tool used in dairy cows to identify those with decreased fertility. It considers the size and position of the reproductive tract relative to the pelvis, as determined by trans-rectal palpation. This study investigates the impact of a reproductive tract scoring (RTS) system on fertility and open period in Holstein-Friesian dairy cows under upcountry intensive management conditions in Sri Lanka. Cows were categorized into four groups: RTS1, RTS2, RTS3, and Control. Data were collected from 84 cows (n=84), including parity-specific metrics such as the open period and the number of artificial inseminations (AI) required for conception. Statistical analyses included descriptive statistics, Spearman correlation, and Kruskal-Wallis tests. The results showed significant differences ($P<0.0001$) in reproductive performance among RTS groups. Cows in RTS3 demonstrated the longest open period (255.05 ± 64.90 days) and highest AI attempts (5.05 ± 2.25), whereas cows in RTS1 had the shortest open period (112.67 ± 37.56 days) and lowest AI attempts (1.67 ± 0.66). A strong positive correlation was observed between RTS scores and reproductive inefficiency metrics ($p < 0.05$). RTS represents easily available information to predict reproductive performance and presents promise as a novel approach to improve dairy fertility. The findings can be integrated into breeding programs to select replacement heifers with superior reproductive traits; potentially reducing economic losses associated with prolonged open periods, failed inseminations and management of repeat breeding.

Keywords: *AI consumption, dairy cattle, fertility, open period reproductive tract scoring*

Isolation of Bacterial Pathogens from Cows with Subclinical Mastitis and Their Sensitivity to Antibiotics

ND Dikkumbura[1*], JLCS Perera[1] and NMSN Bandara[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*NLDB Manikpalama Farm, Bopaththalawa*

[*]nddikkumbura@std.agri.sab.ac.lk

Subclinical Mastitis is the most common disease in Sri Lankan dairy farms, significantly reducing milk quality, composition and production. It causes udder inflammation and elevated somatic cell counts, leading to increased veterinary costs and, in chronic cases, culling of affected cows. This study aimed at isolating bacterial pathogens from cows with subclinical mastitis and their sensitivity to antibiotics. Eleven recently calved cows were examined for subclinical mastitis across first, second, and third or higher lactations, which were selected in this study. The California Mastitis Tests (CMT) were performed on all four udder quarters at 0, 30 and 60 days of calving. Positive milk samples (11) were used to isolate pathogens and to perform the antibiotic sensitivity using 09 antibiotics i.e. Amikacin (30µg), Ampicillin (10µg), Azithromycin (15µg), Cefoxitin (30µg), Cephalexin (30µg), Chloramphenicol (30µg), Ciprofloxacin (5µg), Meropenem (10µg), Tetracycline (30µg). The predominant pathogens identified were, *Staphylococcus* spp. (45%), *E. coli* (18%), and *Streptococcus* spp. (9%). Effective antibiotics for *Staphylococcus* spp. and *Streptococcus* spp. were Ciprofloxacin, Cephalexin, Cefoxitin, and Ampicillin. Among them, Ciprofloxacin (5/10) was the best antibiotic against *Staphylococcus* spp. and *Streptococcus* spp. For *E. coli*, Cephalexin, Cefoxitin, Azithromycin and Chloramphenicol were the most effective antibiotics. Most tested pathogens were susceptible to Cephalexin, which is also commonly available as intramammary infusion. *Staphylococcus* spp. was isolated in 1st, 2nd and 3rd lactations as the most abundant pathogen in milk samples. Monitoring antibiotic resistance trends periodically to ensure the continued effectiveness of offered treatments. These findings emphasize the need for targeted mastitis management strategies tailored to breed and lactation to enhance herd productivity and farm profitability.

Keywords: *antibiotic sensitivity test, antibiotic resistance, California mastitis test, subclinical mastitis, udder health*

Cross Sectional Survey in Prevalence of Major Cattle Diseases in Dry and Intermediate Zones in Sri Lanka during 2023

KLB Priyamal*, DMHKS Dissanayake and TSP Jayaweera

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

klbpriyamal@std.agri.sab.ac.lk

The spatial and temporal distribution of cattle diseases across Sri Lanka's North Western Province (NWP), Eastern Province (EP), North Province (NP) and North Central Province (NCP) in 2023 reflects significant regional variations in morbidity and mortality rates. Data were gathered from the Department of Animal Production and Health using pre-tested questionnaires from 337 respective veterinary surgeon's offices. 5,196 Bovine babesiosis cases caused 125 deaths across the island in 2023, among them the highest occurrence was reported in the Kurunegala district of the NWP. The highest number of mastitis cases from the Island total were also reported from the NWP in 2023. The total number of mastitis cases was 3,454 in the second quarter and 3,702 in the third quarter of 2023 in the entire landmass. Among them, 709 and 757 mastitis cases were recorded in NWP during the second and third quarters of 2023. Similar to 2022, the highest mastitis incidences were reported from NWP at 21.93% of the Island total during the first quarter. In 2023, out of the total (728) Foot and Mouth Disease (FMD) cases reported island-wide, EP reported 412 cases, while NCP and NP reported 91, and 11 cases respectively. In 2022, the reported FMD cases from the NCP, EP, NWP and NP were 1072, 975, 420, and 87 respectively. In 2023, FMD preventive vaccination campaigns administered 59 220 doses in NCP, 46 629 in NWP, 1500 in NP, and 63 420 in EP. Out of the total 10 295 cases of Lumpy Skin Disease (LSD) reported in 2023, NWP, EP, NP, and NCP provinces collectively accounted for a significant proportion, with notable hotspots in Kurunegala (2,731 cases), Ampara (769 cases), Anuradhapura (874 cases) and Jaffna (160 cases). These findings emphasize that regional variations in cattle diseases across Dry and Intermediate Zones in 2023 were largely influenced by management practices and vaccination efforts. The increase in Bovine babesiosis and Lumpy Skin Disease in NWP and EP, compared to previous years, is likely due to climate factors and inconsistent control measures. The rise in FMD cases, despite higher vaccination in NCP and NWP, indicates challenges with vaccination coverage and effectiveness, especially in the NP and EP.

Keywords: Bovine babesiosis, foot and mouth disease, lumpy skin disease, mastitis, prevalence

Potential Application of Inulin and Citrus Pulp in Replacing Fat in Processing of Pork Sausages

NAAD Madhushani[1*], A Gunarathne[1], MP Senanayake[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*ADM Food Products (Pvt.) Ltd., Badalgana, Sri Lanka*

[*]dilshikam256@gmail.com

Pork back fat (85.64%), is widely used as a source of fat for pork sausages, but a high concentration of unhealthy fat in pork fat poses a health risk. This study explored the use of dietary fibers, specifically inulin and citrus pulp, as fat replacers in pork sausages to assess their effects on nutritional, physicochemical, and sensory attributes. Five treatments: T0 (control) (100% pork back fat), T1 (70% pork back fat + 30% inulin;), T2 (50% pork back fat + 50% inulin), T3 (70% pork back fat + 15% inulin + 15% citrus pulp), and T4, (50% pork back fat + 25% inulin + 25% citrus pulp) were tested for pH, cooking loss (CL), water holding capacity (WHC), emulsion stability, texture profiles, and antioxidant properties, nutritional properties and sensory attributes. Proximate analysis revealed that replacing pork fat with inulin and citrus pulp (T4) reduced fat (36.58%) and gross energy content (3655.99 kcal/kg) while increasing crude fiber, ash, and moisture content (T4). The addition of inulin and citrus pulp (T4) led to lower pH values. Sausages with high WHC and lowest cooking loss were exhibited from the T3 treatment. The same treatment yielded the highest emulsion stability indicating a formation of more cohesive protein, fat and fiber matrix during processing. Antioxidant activity (DPPH radical scavenging) significantly increased (28.04%) with the addition of inulin and citrus pulp, with T4 exhibiting the highest antioxidant capacity. Noteworthy to mention that citrus pulp contributed to a greater extent to antioxidant capacity. The sensory evaluation highlighted T3 as the most acceptable formulation, maintaining desirable texture, flavor, and aroma with a balanced combination of fat, inulin, and citrus pulp. These findings suggest that inulin and citrus pulp together (T3) can serve as effective fat replacers in sausages, providing a healthier alternative in reducing fat and calories with consumer acceptable sensory attributes.

Keywords*: antioxidant activity, fat replacement, nutritional and physicochemical properties, pork sausage, sensory attributes*

Integrated Analysis of Population Dynamics and Morphometric Traits of *Ompok ceylonensis* in Samanalawewa Reservoir, Sri Lanka

DIP Kularathna* and CN Walpita

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*dipkularathna1997@email.com

The *Ompok ceylonensis* (Dry zone butter catfish), locally known as "Valapotta" is a commercially important endemic freshwater fish species of the Siluridae family, valued for its ecological and economic importance. To deepen understanding of its population dynamics and morphometric traits, this study assessed growth patterns, mortality rates, and recruitment trends in the Samanalawewa Reservoir (SWR). Length frequency data of *O. ceylonensis* were collected monthly from the different sampling sites and related to a landing site of Samanalawewa Reservoir (SWR) between November 2023 and January 2024. The length frequency distribution obtained from monthly samples showed exploited sizes between 20-45 cm. The model lengths with cohorts were identified monthly. The length frequency distribution suggested that the population consisted of a maximum of three age groups, with mean total lengths (TL) of 24.36 cm, 28.16 cm, and 32.2 cm, respectively. Growth parameters of the von Bertalanffy growth formula (VBGF), including the asymptotic length ($L\infty$) and growth coefficient (K) were estimated for *O. ceylonensis* in the SWR. Using the Electronic Length Frequency Analysis (ELEFAN-I) program the $L\infty$ and K values for *O. ceylonensis* were determined to be 49.88 cm and 1.5 $year^{-1}$, respectively. Total mortality (Z) was estimated using the length-converted catch curve method as implemented in ELEFAN II. The natural mortality rate (M) was estimated using Pauly's empirical relationship based on the parameters of the VBGF ($L\infty$ and K) on the mean water temperature (T= 27.5 °C). According to the predictions per year, Z= 4.46, and M= 2.00 respectively. For *O. ceylonensis*, recruitment patterns suggested, two annual peaks from April to August. The estimated maximum allowable exploitation rate (Emax) for the Relative Yield and Relative Biomass, per Recruit (Knife-edge Analysis) [Y'/R and B'/R] was 0.42, corresponding fishing mortality was 2.46 $year^{-1}$. Nevertheless, with the limited observational framework, these findings emphasize the importance of protecting younger cohorts and maintaining recruitment stability through target fishing restrictions and periodic stock assessments. These strategies will be vital to maintaining the ecological and economic values of *O. ceylonensis.*

Keywords: *ELEFAN (Electronic Length Frequency Analysis), exploitation dynamics, mortality estimation (Pauly's empirical model), recruitment patterns, Von Bertalanffy Growth Function (VBGF)*

Variation of Histamine Levels in Fresh Yellowfin Tuna (*Thunnus albacares*) Landed from Selected Fishery Harbors in Sri Lanka

GA Randeepani*, RKC Jeewanthi

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*g.a.randeepani1999@gmail.com

Yellowfin tuna (*Thunnus albacares*), a key species in the Scombridae family, is economically significant globally and in Sri Lanka, where it ranks as the second most valuable tuna species. Histamine, a biogenic amine linked to scombroid fish poisoning, can accumulate in yellowfin tuna due to histamine-producing bacteria. Yellowfin tuna processors should have a better knowledge of histamine levels, which can help to ensure that only safe, high-quality tuna reaches consumers, thereby protecting consumer health. This study examines histamine level variations in fresh yellowfin tuna samples collected from various fishery harbors. It identifies the highest, and lowest rejection rates reporting fishery harbors in Sri Lanka due to the histamine inclusion and the impact of maintaining good or bad handling practices for the rejection. Histamine testing data was collected using the ELISA method from 2,086 fish samples with the details of boat log sheets. The sampling method was stratified random sampling at 10 harbor locations and analyzed using quantitative analysis. The results revealed that most samples (88%) fell within the safe limit of 0–10 ppm. Analysis of histamine content across ten harbors highlighted significant regional differences ($p<0.05$). Dikowita (20.57%), Galle (16.11%), Nilwella (15.07%), Suduwella (12.01%), and Wennappuwa (26.48%) reported the highest rejection rates and variations. Trinco (2.41%) and Valaichchenai (3.85%) reported the lowest rejection rates and variations. Other harbor locations (Dewinuwara-7.21%, Mathara-8.17%, and Puththalam-7.69%) reported moderate rejection rates. The study recommends enhancing the cold chain during transportation from the harbor to the processing unit and implementing training programs for employees and suppliers to mitigate the issue of yellowfin tuna rejection due to histamine inclusion.

***Keywords**: fishery harbors, histamine content, yellowfin tuna*

Development of Soup Cube from Shrimp Head Waste

GDPS Dilshani [1*], CN Walpita [1], and W Wimalarathne [2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Ceylon Fresh Seafood (Pvt.) Ltd, Ja-Ela, Sri Lanka*

[*] piyumisithara22@gmail.com

By-products generated by the seafood processing industry have posed significant economic and environmental challenges. This study focused on upcycling shrimp head waste into a flavoursome soup cube, transforming an underutilized by-product into a valuable culinary resource. All formulations were developed exclusively using seafood processing by-products. The study examined three formulations: (1) Shrimp Head soup cube (SH), (2) Shrimp Head with Shrimp Meat soup cube (SHsm), and (3) Shrimp Head with Swordfish Meat soup cube (SHsfm). Shrimp chin-cut meat, obtained from the removal of shrimp chin muscles, and swordfish meat, sourced from trimmings, were incorporated alongside shrimp head waste as raw materials to enhance the nutritional and sensory properties of the soup cubes while complementing the primary focus on shrimp head waste. This approach aligns with the principles of sustainability by maximizing the value of seafood processing by-products and reducing waste. The formulations were prepared with a consistent ratio of 70% major ingredients and 30% minor ingredients. Formula 1 (SH) used 70% shrimp head powder, Formula 2 (SHsm) combined 56% shrimp head powder with 14% shrimp chin-cut meat powder, and Formula 3 (SHsfm) included 56% shrimp head powder and 14% swordfish meat powder. The remaining 30% consisted of identical minor ingredients across all formulations. A structured sensory evaluation was conducted with 30 trained panellists using a taste-based questionnaire (1–5 Likert scale) and they revealed significant differences in flavour and overall acceptability among the samples. SHsm achieved the highest flavour score (4.5 ± 0.2, $p = 0.002$), followed by SH (4.2 ± 0.3), while SHsfm scored significantly lower (3.2 ± 0.4). Similarly, SH and SHsm showed superior overall acceptability ($p=0.004$) compared to SHsfm. These findings confirm SHsm as the best option for flavour enhancement, with SH offering a robust alternative for balanced sensory and nutritional quality. Non-significant differences in attributes like colour, texture, smell, and appearance underscored consistency across the formulations. The proximate analysis revealed that both SHsm and SH offer excellent nutritional profiles, with protein contents of 36.21% and 24.17%, respectively, and energy values ranging from 3.41 to 4.28 kcal/g. Shrimp head powder, the base ingredient, exhibited the highest protein (45.71%) and ash content (22.16%), supporting the functional value of the developed products. This study conclusively establishes SHsm as the best choice for flavour, with SH providing strong overall sensory appeal.

Keywords: *flavour enhancement, shrimp head waste, value-added products*

Investigating the Utilization of Sucker Mouth Catfish (*Hypostomus plecostomus*) for Population Control and Sustainable Food Production through Drying and Canning

RAS Kawshalya[1]*, CN Walpita[1], PPSK Patabandi[1] and KA Balasooriya[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*SLIC Lanka Fisheries (Pvt)Ltd, Divulapitiya*

*sandunikaw8@gmail.com

The sucker-mouth catfish (*Hypostomus plecostomus*), a tropical invasive alien fish that originated from Northern South America, belongs to the armored catfish family (Loricariidae). This fish was introduced to Sri Lanka as an ornamental fish species, in 1994. The primary reasons for the invasion of Sri Lankan fresh-water systems are occasional releases due to the carelessness of fish farms, traders and hobbyists. In Sri Lanka, the invasion of sucker-mouth catfish results in ecological and economic challenges, including habitat disruption and damage to fishing equipment. This study focuses on addressing these challenges by proposing a sustainable management approach of utilizing sucker-mouth catfish as a human consumable food. This research aims to evaluate the feasibility of processing sucker-mouth catfish through sun drying and canning techniques to produce consumable products. Sample fish were collected from the Udawalawe Reservoir in Sri Lanka. Dried fish were processed using the sun dry method and canned fish were processed according to the standard method. Sensory evaluation of the final products was conducted using an untrained panel (n=33). The proximate composition analysis revealed that dried fish had a higher dry matter content (76%) compared to canned fish (22.67%). Crude protein content was 37% in dried fish but 15.24% in canned fish. Sensory evaluations indicated that the canned fish product was generally well received, with high acceptability in terms of texture, flavor, and overall appeal. In contrast, the dried fish product received mixed reviews, its texture was rated favorably but its flavor and odor were less appealing. In conclusion, processing sucker-mouth catfish into dried and canned fish is a practical method for population control. The products were found to be acceptable for human consumption, providing a sustainable way to manage this invasive species. By creating market demand, this approach could contribute to reducing environmental impact and enhancing local food sources.

Keywords: *alien invasive species, canning, drying, proximate analysis, Sri Lanka*

Evaluating the Impact of Zeolite on Ammonia Levels and pH Dynamics During the Long-distance Transport of *Poecilia reticulata* in High Packing Densities

ANN Kumari[1]*, CN Walpita[1], U Wickramasinghe[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Haritha Fish Farm (Pvt) Ltd, Bope, Padukka*

*nidunisansala@gmail.com

Ornamental fish trade plays a key role in the global aquaculture industry. Sri Lanka has become a prominent exporter in the ornamental fish industry, particularly for its trade in *Poecilia reticulata* (Guppy fish). The main challenge during the long-distance transport of ornamental fish in high densities is the changes in water quality parameters with elevated ammonia levels and altered pH levels, which can impact fish health and well-being. However, no comprehensive data were available to elucidate controlling methods of ammonia and pH dynamics during the long-distance transport of fish at high densities. Therefore, this study was done to determine the effect of zeolite on ammonia levels and pH dynamics in closed fish packings. To cater to that, in the experiment five zeolite concentrations (0g/L, 10g/L, 20g/L, 30g/L, and 40g/L), and three stocking densities (37,41, and 46 fish per 500mL) were tested and measurements were taken after 30 and 40 hours of unpacking time. For each treatment, three replicates were tested. Parameters measured in the experiment include ammonia levels, pH, and mortality. After unpacking, arrival conditions were supplied to the fish, and their physical behavior patterns such as the responsive level of the fish, swimming pattern, and feed intake were observed. According to the results of the experiment, at each stocking density, there was a reduction of ammonia levels corresponding to the zeolite concentrations. The lowest ammonia levels were observed at 40g/L zeolite concentration. There was a significant reduction of ammonia levels in all zeolite-treated samples compared to the control treatment. In pH, at each stocking density, there was an increase in pH levels corresponding to the zeolite concentrations. The highest pH values were observed at 40g/L zeolite concentration, but there was a significant increase in mortality compared to the other zeolite concentrations. In conclusion, 30g/L zeolite can be used effectively to reduce the ammonia concentration and maintain optimum pH with fish performance during guppy transportation at high density.

Keywords**:** *ammonia level, guppy fish, ornamental fish trade, pH dynamics, stocking density, zeolite concentrations*

Development of a Sea Bass *(Lates calcarifer)* Sausage with the Incorporation of Scotch Bonnet *(Capsicum chinense)*

JHB Indiwaree[1]*, CN Walpita[1], WAAS Weerasooriya[2] and KMN Madusanka[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Gills International (Pvt.) Ltd. Muthuwadiya Road, Katunayake*

*indeewarib712@gmail.com

Sea bass is a white fish that has a continuous supply of production and is used in the culinary industry because of its taste. The demand for value-added seafood products is rapidly increasing due to consumer preferences for convenient, healthy, and high quality meal options. This study aimed to develop a novel sea bass *(Lates calcarifer)* sausage incorporating Scotch Bonnet *(Capsicum chinense)* to enhance flavor and evaluate its physicochemical and sensory properties with different inclusion levels of Scotch Bonnet. Four treatments were used as Control, T1, T2 and T3 with inclusion levels of Scotch Bonnet at 0%, 2%, 4% and 6% respectively. Sausages were analyzed for physicochemical properties, including cooking loss, pH, water-holding capacity, emulsion stability, and texture profile. Sensory evaluation was conducted between treatments including two market products (M1 and M2) with 30 untrained panelists using a 5-point hedonic scale to assess color, texture, odor, tenderness, taste, willingness for spiciness, saltiness, meatiness, juiciness, and overall acceptability. Results indicated that all tested physicochemical properties of the sausages were in the standard range. Sensory analysis showed significant differences ($p < 0.05$) among treatments for texture, odor, tenderness, taste, willingness for spiciness, juiciness, and overall acceptability. However, no significant differences ($p > 0.05$) were observed in color, saltiness, or meatiness among treatments. The T1 treatment reported the highest scores for the majority of sensory properties such as texture, odor, tenderness, taste, willingness the spiciness, juiciness, and overall acceptability. The study concluded that incorporating Scotch Bonnet at a 2% level yielded the most favorable sensory attributes in fish sausages. Using sea bass as the base ingredient, the sausages demonstrated high consumer acceptance, highlighting sea bass as an excellent choice for fish sausage. This finding affirms the potential of combining sea bass with Scotch Bonnet to enhance product quality and consumer acceptance.

Keywords: *fish sausage, physiochemical properties, scotch bonnet, sea bass, sensory properties*

Barriers in Ornamental Fishkeeping among the Undergraduates of Sabaragamuwa University of Sri Lanka

WDKA Kumarasinghe*, GVSS Kumara, UGPI Dilshani and CN Walpita

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*anukumarasingha2000@gmail.com

Addressing the challenges in ornamental fishkeeping is essential for the sustainable growth of the ornamental fish industry. This study aims to identify key barriers preventing undergraduates of Sabaragamuwa University of Sri Lanka from engaging in ornamental fishkeeping. A questionnaire covering ownership, preferences, and challenges in ornamental fishkeeping was administered to 155 undergraduates from various faculties of Sabaragamuwa University of Sri Lanka regardless of the academic year. The study was conducted from October 2024 to December 2024. The findings highlighted that 54.2% of undergraduates do not participate in ornamental fishkeeping. 45.8% of students did. Among non-owners (54.2%), 70.3% of undergraduates prefer to rear ornamental fish. The most common reason for not starting ornamental fishkeeping was lack of budget (44.2%), followed by lack of space (42.1%) and lack of knowledge (37.9%). Among non-owners (54.2%), 29.7% of undergraduates do not prefer to rear ornamental fish. The main reasons for not preferring ornamental fishkeeping among 29.7% of respondents include limited time spent on care (56.4%), cost (38.5%) and limited knowledge (30.8%) The main challenge faced by the undergraduates who are already rearing ornamental fish is time constraints (61.9%), followed by the cost of maintenance (47.7%), lack of knowledge (43%), health issues of fish (40%). These findings indicate that although there is an interest in ornamental fishkeeping, considerable obstacles such as affordability, Lack of knowledge and time management need to be addressed. It is crucial to find solutions to these challenges, such as making resources more affordable, providing knowledge about proper fish care, and developing methods to lessen the time needed for critical maintenance.

Keywords: *barriers, ornamental fish keeping, undergraduates*

Consumption Behavior and Preference of Fish among University Students: A Case Study from Sabaragamuwa University of Sri Lanka

PSP Kularathne, AGTM Akururana*, CN Walpita and PST Punchihewa

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*agtmakurana@std.agri.sab.ac.lk

Fish consumption is common in students' main meals in their ordinary life. Because fish is being a versatile protein source. The study examines the fish consumption behavior of students at Sabaragamuwa University of Sri Lanka by analyzing their dietary inclinations, consumption frequency, and the underlying factors shaping their choices in their day-to-day life. It aims to assess the regularity of fish intake, identify key determinants influencing consumption decisions, and evaluate their awareness of its nutritional benefits. A structured questionnaire covering aspects of fish consumption behavior and preference was deployed (*n=215)* to collect information from university students and analyzed through descriptive statistics using SPSS. Out of the results, 82.4% consume fish and 17.6% did not consume due to dislike of taste (50%), allergies (42.1%), high cost (26.3%), and limited availability (15.8%). Approximately 49.4% of consumers reported consuming fish two to three times per week, while 23.6% consumed at least once weekly. Among the various seafood, fish (97.2%), shrimp (49.4%) and prawn (32.6%). were most preferred to consume. Commerson's anchovy (*Stolephorus commersonnii*) (76.4%), skipjack tuna (*Katsuwonus pelamis*) (70.8%), yellowfin tuna (*Thunnus albacares*) (70.2%), gold-stripe sardinella (*Sardinella gibbosa*) (65.7%), and spotted sardinella (*Amblygaster sirm*) (60.7%) were the most consumed fish. However, only a smaller number of individuals consume freshwater fish. Health benefits (84.8%) and the taste of the fish (86.5%) were the most important factors in consuming fish. It was revealed that the most preferable processed fish products were canned fish (86.9%), dried fish (78.8%), and frozen fish (50%). However, data revealed that many students consume freshly buying fish (83.1%) and dried (58.4%) conditions from commonly local markets (87.1%) and supermarkets (51.7%). There was a significant concern about the safety of consuming fish, and the main consumption barriers were high cost (75.3%) and limited availability (32%) of preferred varieties for consumption. These findings provide insights into the factors influencing fish consumption among university undergraduates and highlight areas for promoting its nutritional benefits, also encourage the need of healthier and sustainable eating habits.

Keywords: *fish consumption, protein source, Sabaragamuwa University, Sri Lanka*

Fish Oil Extraction from Asian Sea Bass Belly Trimmings to be used as a Nutraceutical

KMP Yasasmi[1*], CN Walpita[1] and W Wimalarathne[2]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Ceylone Fresh Seafood (Pvt).Ltd, Ja-ela, Sri Lanka*

[*]yasasmipiumika15@gmail.com

The sea bass industry in Sri Lanka is experiencing significant growth in the export market. A substantial portion of fish trimmings generated during processing, particularly belly trimmings are underutilized. Asian sea bass *(Lates calcarifer*) is rich in polyunsaturated fatty acids (PUFAs) such as Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA), which are essential nutrients widely used in nutraceutical products. Given the high cost of omega-3 nutraceuticals in Sri Lanka, this study mainly aimed to investigate the potential of extracting fish oil from Asian Sea Bass belly trimmings for use as a nutraceutical. As well as find the most effective fish oil extraction method. Samples were collected from a sea bass processing plant. The crude fat testing was conducted using the Soxhlet method. Fish oil was extracted using cold press, wet reduction, and microwave-assisted extraction methods. Finally, oil yields, densities, and fatty acid profiles were analyzed. Fatty acid profiling of the extracted oils was conducted using Gas Chromatography-Mass Spectrometry (GC-MS). The Sea Bass belly trimmings contain 23.3% crude fat. The mean oil yields for the three methods were 15.33±1.00% for cold press, 12.99±0.60% for wet reduction, and 10.41±0.50% for microwave-assisted extraction. The highest oil extraction efficiency was reported in the cold press method (65.8±1.5) and the lowest value was microwave-assisted extraction (44.6±1.1). The highest oil loss was indicated in microwave-assisted extraction (55.3±0.8). According to the fatty acid profile, EPA and DHA levels for three methods were EPA 2.18% and DHA 4.68% for cold press, EPA 2.03% and DHA 4.41% for wet reduction, EPA 2.04% and 4.31% for microwave-assisted extraction. The findings indicated that fish oil extracted from sea bass belly trimmings is a good source of omega-3 PUFAs. However, according to the EPA and DHA values, extracted fish oil cannot be used as nutraceutical-grade fish oil in commercial-level production. In addition to that, the cold press method is the most effective for fish oil extraction. These findings highlight the potential of converting underutilized fish processing waste into a high-value product.

Keywords: *belly trimmings, fish oil extraction, Lates calcarifer, nutraceuticals, sea bass*

Involvement of Nutmeg Producers in Kandy District of Sri Lanka in Producing Value-Added Nutmeg Products

MVP Manaharie*, AMS Tharushika, DMAK Samaranayake and UBE Sasanka

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

*mvpmanaharie@gmail.com

Nutmeg, a versatile spice with high potential for value-added products, remains underutilized in Sri Lanka as many producers face challenges that hinder its economic potential. This study investigates the involvement and factors influencing nutmeg producers in the Kandy district in creating value-added products. Following exploratory, quantitative research approach, data were collected from 60 nutmeg producers selected through convenience sampling technique to explore their current practices, product preferences, barriers, and motivations. Face to face interviews were used for collecting data and data were analyzed using descriptive statistics. The findings revealed that 43.3% of producers engage in value addition, with Nutmeg Powder being the most frequently produced value-added product (77.8%), driven by its practicality, ease of production, and market demand. Traditional products, such as Nutmeg Chutney (44.4%) and Nutmeg Pickle (40.7%), exhibit moderate appeal, whereas specialized items like Nutmeg Butter remain untapped due to technical challenges and limited market interest. Key motivators for value addition include financial incentives (85%) and market demand (70%), underscoring the economic drivers behind production decisions. However, significant barriers such as lack of equipment and technology (98.3%), knowledge and skills (88.3%), and high production costs (53.3%) restricted the broader adoption. Additionally, support services were rated poorly by respondents, with only 8.3% expressing satisfaction, indicating a critical gap in institutional support. To address these challenges, the study recommends strengthening financial support mechanisms, enhancing access to modern technology, providing targeted training programs, and improving market access. These measures can promote diversification into underutilized products, such as Nutmeg Butter and essential oils while enhancing profitability and sustainability. This research underscores the potential for value-added nutmeg production and provides actionable insights for policymakers, industry stakeholders, and researchers.

Keywords: *nutmeg powder, nutmeg producers, preferences, production challenges, value-added products*

Alcohol Beverage Uses and their Associated Health, Social and Economic Consequences among the Community during Economic Crisis - A Case of Sabaragamuwa Province - Sri Lanka

KAS Ruwanthi[1], RK Mutucumarana[2*], MMSC Senevirathne[1] and N Maharage[3]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[3]*Agri Deshiya (Pvt) Ltd., Kuruwita, Sri Lanka*

[*]ruvinim@agri.sab.ac.lk

The study described herein investigated the patterns of alcoholic beverage consumption and its associated health, social and economic consequences in the Sabaragamuwa province, Sri Lanka, during the economic crisis. A total of five hundred (500) participants (250 from each district), were selected using the cluster sampling technique in this study. A questionnaire was designed to identify the demographic, socioeconomic, and behavioral factors influencing the use of alcoholic beverages. Descriptive and inferential statistics were used to analyze the data. High alcohol consumption rates were observed among the young adults (18-24 years, 25.6%) and the middle-aged individuals (45-54 years, 24.6%), predominantly the males (86%). Stress and anxiety (51.54%) were identified as the leading causes of increased consumption, while financial restrictions (41.51%) were the primary reasons for reduced intake. The data collected through an in-depth verbal communication-based self-reported questionnaire highlighted significant health consequences, including liver and cardiovascular diseases, alongside mental health issues such as anxiety and depression. Social impacts include heightened domestic violence and employment challenges, exacerbating economic instability. A net decrease in alcohol consumption (62%) indicated the dual effects of financial limitations and increased awareness. Recommendations include community support programs, public health campaigns, and policy reforms such as increasing awareness of the health issues affected by alcohol consumption to mitigate alcohol-related harm during economic downturns. The study revealed a multifaceted relationship between alcohol consumption and the social, health, and economic consequences with special reference to economic crises in Sabaragamuwa Province. The findings underscored the need for multifaceted interventions to address the interplay between economic crises and alcohol use, ensuring community resilience and wellbeing.

Keywords: *alcohol beverage consumption, economic crisis, health consequences, social consequences*

Association of Food Habits of Undergraduates in Sabaragamuwa University of Sri Lanka on the Occurrence of Noncommunicable Diseases

SM Jayawardhana, SPH Pubudu*, PMA Arachchi, PST Punchihewa and TSP Jayaweera

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

*hasalapubudu@gmail.com

Non-communicable diseases (NCDs) are defined as diseases that are not transmissible from one person to another. It has been shown that poor dietary pattern contributes to NCDs (gastritis, diabetes, hypertension, high cholesterol obesity, etc.) in Sri Lanka. The study was conducted to evaluate the association of food habits of undergraduates at Sabaragamuwa University of Sri Lanka on the occurrence of noncommunicable diseases. The study engaged 508 students across the Sabaragamuwa University of Sri Lanka, employing a structured questionnaire aimed at factors affecting food habits, occurrences of non-communicable diseases (based on their current medical treatments for NCDs) and socio-economic status. The study was conducted from March to December 2024 and the data were analyzed using SPSS version 22 software and Microsoft Excel 2016 software. Only 69.2% of the students in the study group consume all three meals per day regularly. Only 61.1% of students consume breakfast regularly, while a significant proportion (38.9%) skip it. A large majority of students consume lunch (87%) and dinner (88%) regularly, indicating these were the most consistent meals among undergraduates. The breakfast preference of the students significantly ($P< 0.05$) increases with the academic year. The undergraduates who allocate above Rs.15000 per month for food tend to consume less fast food. A positive coefficient ($P< 0.05$) indicated that skipping breakfast was associated with a higher likelihood of suffering from NCDs for more than two years (68%). Among these students, 83.3% take treatments for NCDs regularly, while others take intermittent treatments. The frequent (more than 4 times a week) consumption of fast foods to replace the main meal was significantly ($P< 0.05$) associated with an increased risk of NCDs. There was no significant effect on skipping breakfast and the duration of suffering from NCDs. These findings emphasized the need for targeted interventions including educating undergraduates on healthy dietary patterns and the influence them on preventing NCDs together with promoting affordable, nutritious diets for undergraduates across all academic years.

Keywords: *dietary habits, fast foods, non-communicable diseases undergraduates in Sabaragamuwa University of Sri Lanka*

Food Consumption Pattern of Adolescents in Imbulpe Divisional Secretariat, Rathnapura District, Sri Lanka

BTM Sanjeewani*, WMD Dilshani, JGV Rasara, JC Kaushalya, RLP Lakshan and TSP Jayaweera

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*btmsanjeewani@std.agri.sab.ac.lk

Adolescence is a vital stage of growth and development characterized by increased nutritional needs. However, many adolescents adopt unhealthy and less nutritious dietary habits. A study was conducted among adolescents in the Imbulpe Divisional secretariat of Rathnapura district from February to May 2024 with the primary objectives of assessing dietary intake and identifying factors influencing food choices and eating behaviours. The Zonal Educational Office data indicates that the Imbulpe Secretariat Division comprises 2,500 adolescents. The total number of 258 participants, representing 10 % of the total adolescent population of the area, were selected using simple random sampling technique and data were collected using a structured questionnaire as a survey. Data on demographic characteristics, specific dietary habits, meal frequency, and food consumption patterns were analyzed using descriptive and inferential statistics like chi-square test through SPSS Statistics 27. Key findings revealed that 43.20% of adolescents were aware of their BMI, with most falling within the normal range (18.5–25), while only 5% were overweight. Protein and calcium intake were adequate, with 88.80% of respondents consuming meat and 77.10% consuming fresh milk more than twice a week, respectively. However, only 23.30% consumed fruits several times a week, compared to 67.40% consuming vegetables several times a day. Breakfast was regularly consumed by 57%, while lunch was frequently skipped. Education level significantly *($p < 0.05$)* influenced meal patterns, with gender affecting the protein intake but not the meal timing. To address these gaps, BMI awareness campaigns, school fruit programs, and workshops promoting consistent meal patterns are recommended. Additionally, nutrition workshops targeting education-related dietary gaps and gender-specific interventions can improve meal diversity. Community-based solutions, such as nutrition campaigns and community kitchens, can further enhance dietary practices.

Keywords: *adolescents, dietary patterns, Imbulpe, meal frequency, Sri Lanka*

A Study on the Impact of Breakfast on the Physical and Mental Well-Being of Undergraduates in the Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

EHH Piyumika*, KHR Dulanjali and HPDP Kumarasinghe

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ehhpiyumika@std.agri.sab.ac.lk

This study examined the impact of breakfast consumption on the physical and mental well-being of the students of the Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka. Breakfast is a vital meal that enhances physical activities, emotional stability, and overall health, particularly for students facing academic pressures. Despite these benefits, many students skip breakfast due to various factors, including time constraints and financial limitations. A comprehensive survey was conducted to analyze attitudes toward breakfast and its relationship to health outcomes. Key objectives included identifying the physical health benefits linked to regular breakfast intake, assessing its influence on academic performance, and exploring correlations with mental health indicators like stress and anxiety. The study was conducted at the Faculty of Agricultural Sciences at Sabaragamuwa University of Sri Lanka, targeting students aged 20 - 28 years. A sample of 278 students was selected using convenience sampling due to logistical constraints. The findings revealed that regular breakfast consumption is positively associated with improved energy levels (71.7%), enhanced concentration (11%), and reduced stress (15.2%) in undergraduates. The analysis revealed that 87.4% of students skip breakfast at least once a week, with reasons cited as including lack of time (79.1%), oversleeping (62.3%), not feeling hungry (38.7%), lack of available options (37.2%), and financial constraints (26.2%). The study concludes that regular breakfast consumption significantly enhances physical health, academic performance, and mental well-being among students, highlighting the need for interventions to address the barriers preventing students from eating breakfast.

Keywords: *breakfast, mental well-being, physical well-being, Sabaragamuwa University, undergraduates*

Impact of Natural Ingredient-Based Marinades on Sensory and Physicochemical Properties of Broiler Chicken Breast Meat

KRC Karunarathna[1], RK Mutucumarana[2*] and KNK Rathnasekara[3]

[1]*Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[3]*Nelco Food Products (Pvt) Ltd., Godakawela, Sri Lanka*

[*]ruvinim@agri.sab.ac.lk

Marination is a technology used in meat processing to enhance the quality characteristics of meat. The present study investigated the impact of two natural ingredient-based marinades on the quality attributes of immersion-marinated broiler chicken breast meat. Broiler chicken breast meat samples (average weight; 50.00 ± 5.00 g each) were randomly allocated to three treatments: un-marinated control, marinade Formula-1 (MF-1) and marinade Formula-2 (MF-2) (n=8). Coconut oil, lime juice, turmeric powder, onion, garlic, table salt, black pepper, and gamboge cream were dissolved in water to prepare the marinade Formula-1. Coconut oil, lime juice, soy sauce, yogurt, onion, garlic, cloves, table salt, black pepper, curry powder, turmeric powder, mustard and chili powder were used to prepare the marinade formula-2. Immediately after immersion marination, meat samples were stored at 4°C for 8 hours. Samples were evaluated for pH, marinade uptake, cooking yield, cooking loss, drip loss, texture profile (TP), and color using standard methods. Sensory attributes such as toughness, aroma, flavor, surface colour, marinade penetration, and colour penetration were tested using 30 untrained panelists. Marination significantly ($p<0.05$) reduced the meat's pH. There was no significant ($p>0.05$) difference between the marinade uptake of both MF-1 and MF-2 treatments. Meat marinated with MF-2 showed a significantly ($p<0.05$) reduced marinade loss. No significant ($p<0.05$) difference was observed in cooking yield between MF-1 and MF-2. Cooking loss and drip loss were not significantly ($p>0.05$) affected by marination. None of the texture attributes tested were significantly ($p>0.05$) affected by marination. Meat marinated with MF-2 significantly ($p<0.05$) improved the redness in both uncooked and cooked broiler chicken breast meat. Broiler chicken breast meat marinated with MF-1 and MF-2 formulas was significantly more acceptable to the panelists than the control. The present study concluded that both marinade recipes effectively improved the physicochemical and sensory attributes of immersion marinated broiler chicken breast meat.

Keywords: *chicken, immersion, marination, meat, sensory*

Assessing Consumer Perception Towards Calorie Labelling on Restaurant Menus: Evidence from Colombo District, Sri Lanka

GCT Perera*, KNK Pabasara and DIV Peiris

Department of Agribusiness Management, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*pererachanu17@gmail.com

The increase in non-communicable diseases, especially regarding diet in Sri Lanka, has created a strong need for effective health measures. This research explores current consumers' perceptions of the calorie information labelling on restaurant menus in the Colombo district because it is the commercial and cultural capital of Sri Lanka. This study adopted a quantitative research method, with the target respondents administering a structured questionnaire to 200 respondents using convenience sampling because of the easy approach and availability for participation. Discrete data was collected and analysed using descriptive statistics analysis tools in Excel and SPSS. Frequency distributions and cross-tabulation were used to analyse the collected data. This study shows that 85.5% of participants are aware and 68.5% are interested in calorie labelling on restaurant menus. Most participants showed a high willingness to be guided by calorie information. Most respondents prefer restaurants that disclose calorie information when choosing a restaurant to dine out. The study also analyzed how different formats were preferred for presenting calorie information with respondents favouring simple and understandable formats. Menu calorie labelling can help consumers be more aware of their diets and consume fewer calories. Policymakers can enforce restaurant disclosure to enhance consumer decision-making. Restaurant owners can benefit from calorie labelling strategies, building brands, and catering to health-conscious consumers. Public health organizations can launch campaigns to inform consumers about healthier diets. Thus, the study aims to assess consumers' perceptions of the calorie information labelling on restaurant menus in Colombo, Sri Lanka, to promote informed dietary choices.

Keywords: *calorie labelling, consumer perception, food choice, public health, restaurant menus*

A Study on Fast Food Consumption Pattern and Status of BMI among the Undergraduates of the Faculty of Agricultural Sciences of Sabaragamuwa University of Sri Lanka

UCN Dissanayaka[1], BVM Binaragama[1*], RPDS Kumari[1], PD Hasminadi[1], BTGGY Chandrasiri[2], TSP Jayaweera[1]

[1]*Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*
[2]*Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka*

[*]malithibinaragama98@gmail.com

A study was conducted from February to May 2024 to assess fast-food consumption habits and their effect on Body Mass Index (BMI) among undergraduates of the Faculty of Agricultural Sciences of Sabaragamuwa University of Sri Lanka. Data was collected using a structured questionnaire, and results were analyzed using SPSS statistics. A total of 167 respondents participated in this survey, with the majority aged 21–23 years (56.9%), predominantly female (52.7%), and most in their 3rd year of study (46.1%). The findings revealed high fast-food consumption, with most students consuming fast food 1– 4 times per week (67.6%). The majority of respondents include short eats (76%), fried rice (60%), buns (54.5%), and *koththu* (51.5%), influenced largely by convenience (50.3%), taste (22.8%) and affordability (16.8%). Dietary habits showed that 64.7% of students eat three meals daily. Fruit and vegetable intake is limited, with only 12% consuming them daily. Although 71.9% are aware that fast food affects BMI, a considerable portion (18.6%) assume otherwise or remain unsure. Healthy food accessibility at university is limited, with only 2.5% finding it very accessible, and 63.5% reporting a decline in dietary quality since starting university life. Encouragingly, 74.9% are attempting to reduce fast food consumption, reflecting growing health consciousness. BMI-related findings indicate a majority of students are within the 50–59 kg weight range (36.5%), though 26.9% are underweight, and 23.4% are overweight or obese. Height distribution showed most students between 160 –169 cm (43.1%). Chronic health conditions are reported by 13.2% of respondents, with 18% citing medical conditions affecting diet or weight. The analysis revealed there is no strong relationship between BMI and the consumption of fast food. This study highlights a need for enhanced access to healthier food options and educational campaigns promoting balanced diets and regular physical activity to improve student health outcomes.

Keywords: *body mass index, dietary habits, fast food, nutritional awareness, university students*

Biofilm formation by *Salmonella* Typhimurium and *Escherichia coli* as mono and dual biofilm

KMNI Abeyrathne, MMF Muhmina, MVC Indumini, NLM Sathyangana, RMND Rathnayaka, PMM Sankani, KWKD Maduwanthi, AWK Chamodi, IAM Samarakkodi, MAHS Moragoda, DMHKS Dissanayake, KK Biyagama, KLB Priyamal, TUTP Bandara, NAAD Madhushani, KMP Yasasmi, BMAM Balasooriya, S Kirubashini, JLCS Perera, DNN Madushanka, TSP Jayaweera, HAD Ruwandeepika*

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

* ruwandeepika@yahoo.co.uk

The ability to form biofilm by bacteria has greater concerns in food industry. These biofilms are surface attached microorganisms and they create persistent source of contaminations. Both *Salmonella enterica* serovar Typhimurium (*S.* Typhimurium) and *Escherichia coli* (*E. coli*) are capable of forming biofilms, adhering to surfaces and creating a protective community of bacteria encased in a self-produced matrix. This study investigates the biofilm formation ability of *Salmonella* Typhimurium (ATCC 14028), *Escherichia coli* (ATCC 25922), and their co-culture (dual) grown on 96 wells microtitre plates containing nutrient broth at various time points (24, 48, 72, and 96 hours) at 28°C. Biofilm formation was assessed by optical density measurements according to the standard methods. The results demonstrate that the *S.* Typhimurium exhibited the highest biofilm formation across all time points, with readings of 1.890 ± 0.101, 2.445 ± 0.151, 2.793 ± 0.142, and 2.322 ± 0.1426, respectively when compared to *E. coli* (as mono biofilm). *E. coli* displayed significantly lower ($p<0.05$) biofilm formation, starting at 1.1142 ± 0.12 at 24 hours and reaching 1.588 ± 0.142 by 96 hours (as mono biofilm). This study revealed that the combination of *S.* Typhimurium and *E. coli* resulted higher biofilm formation (dual biofilm) levels comparable to *S.* Typhimurium alone at most time points, with optical densities of 2.352 ± 0.120, 2.843 ± 0.16, 3.148 ± 0.152, and 2.435 ± 0.123 ($p<0.05$). This study concluded that the biofilm formation of *E. coli* is less pronounced than *S.* Typhimurium, *E. coli* combination with *S.* Typhimurium does not inhibit biofilm development and may even suggest that under the conditions tested in the study, it supports a synergistic effect on biofilm formation.

Keywords: *biofilm, dual, Escherichia coli, mono, Salmonella Typhimurium*

Antibiotic Sensitivity of *Salmonella* Spp Isolated From Broiler Chicken Meat

GAHK Godamune, BH Gimhani, ND Dikkumbura, WDN Welgama, AN Sewwandi, SJ Wickramarathna, HMWCIK Welagedara, PVAN Thavishta, EGSD Premarathna, HRSD Shanthapriya, HGI Chathurika, RAKP Dharmasiri, MGNT Wijerathna, DDTM Hemarathna, DIP Kularathna, BMAM. Balasooriya, S Kirubashini, JLCS Perera, DNN Madushanka, TSP Jayaweera, HAD Ruwandeepika*

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ruwandeepika@yahoo.co.uk

Antibiotic resistance has become a silent pandemic posing a severe threat to public health globally jeopardizing the efficacy of life-saving treatments. Indiscriminate use of antibiotics in human medicine, veterinary medicine, livestock, etc. has led to this devastating problem leading to several deaths annually. This study evaluates the sensitivity of *Salmonella* isolates against ten commonly used antibiotics, namely Nalidixic acid (NA, 30µg), Tetracycline (TE, 30µg), Erythromycin (E, 15µg), Nitrofurantoin (NIT, 300µg), Ampicillin (AMP, 25µg), Gentamicin (GN, 10µg), Cephalexin (CN, 30µg), Ceftriaxone (CTR, 30µg), Kanamycin (K, 30µg), and Meropenem (MRP, 10µg). This study included ten (10) *Salmonella* isolates isolated from broiler chicken meat, and the antibiotic susceptibility was assessed by using the disc diffusion method. Out of ten isolates 8 have shown resistance to Nalidixic acid (NA) and gentamicin (GN) and two isolates showed intermediate resistance to these antibiotics. All the isolates were resistant to Tetracycline (TE), Erythromycin (E), Nitrofurantoin (NIT), and Ampicillin (AMP). Three isolates were sensitive and 4 isolates were resistant to Co-trimoxazole (CTR) while 3 isolates showed intermediate resistance. Meropenem (MRP) and Kanamycin (K) exhibited the highest level of effectiveness, with all isolates remaining sensitive to both of these antibiotics. All the tested *Salmonella* isolates have shown multidrug resistance having resistance against more than three antibiotics. The findings of this study underscore the high prevalence of resistance to common antibiotics like Ampicillin, Tetracycline, and Nalidixic acid among *Salmonella* isolates and more importantly the multidrug resistance, signaling the need for continuous surveillance of antimicrobial resistance. However, Meropenem and Kanamycin remain promising options for treating multi-drug resistant *Salmonella* infections.

Keywords: *antibiotic, multi drug, resistance, sensitive*

Antibacterial effect of *Curcuma longa* (Turmeric) and *Cinnamomum verum* (Cinnamon Bark) on *Salmonella* Spp.

KVG Kannanthudawa, PK Hitige, HAT Hettiarachchi, GN Athukorala, MGS Tharaka, GDPS Dilshani, NPM Abeysinghe, RAS Kawshalya, BBK Perera, ANN Kumari, MMM Deeshani, JHB Indiwaree, YPDC Kumari, TRI Kumari, LAGMP Liyandeniya, BMAM Balasooriya, S Kirubashini, JLCS Perera, DNN Madushanka, TSP Jayaweera, HAD Ruwandeepika*

Department of Livestock Production, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka

*ruwandeepika@yahoo.co.uk

Antibiotic resistance has become a greater threat at global level, necessitating the search for alternative therapeutic strategies to combat bacterial infections. The present study investigated the *in vitro* antibacterial effect of *Curcuma longa* (Turmeric) and *Cinnamomum verum* (Cinnamon bark) extract (ethanol extract) on ten *Salmonella* Spp. isolated from broiler chicken meat by using the well diffusion method. Antibacterial effect was taken by measuring the inhibition zone following overnight incubation. Ceftriaxone (30 µg / third-generation cephalosporin antibiotic) was used as the standard antibiotic to compare the effect of plant extract. The results indicated that *C. longa* (1g/ml) exhibited promising inhibitory effects compared to *C. verum* (250 mg/ml) on *Salmonella* isolates ($P<0.05$), with the highest inhibitory zones ranging from 14.970±0.505 mm to 19.877±0.301 mm. *C. verum* exhibited moderate inhibitory effects compared to *C. longa*, having the highest inhibition of 13.867±0.625 mm and the lowest of 11.677±0.636 mm, showing consistent but less pronounced antimicrobial activity. Standard antibiotic, Ceftriaxone displayed the most varied effects, ranging from 13.300±1.074 mm to 21.873±0.695mm. While *C. longa* and Ceftriaxone both demonstrated strong antibacterial potential, *C. longa* has shown slightly higher concentrations of inhibition in most isolates compared to Ceftriaxone. Out of ten isolates, five isolates had a higher inhibition zone with *C. longa* than Ceftriaxone. Inhibition zones of the isolates were comparatively lower with the *C. verum* at the concentration of 250 g/ml. This study concluded that both the natural extracts tested possess significant antibacterial properties, with potential implications for developing alternative therapeutic agents against *Salmonella*.

Keywords: *antibacterial, Ceftriaxone Cinnamomum verum, Curcuma longa*

INDEX

AgSURS|2025

Empowering Research for Innovative Agriculture

Faculty of Agricultural Sciences I Sabaragamuwa University of Sri Lanka

AGRICULTURAL SCIENCES UNDERGRADUATE RESEARCH SYMPOSIUM 2025

''EMPOWERING RESEARCH FOR INNOVATIVE AGRICULTURE''

OUR PROUD SPONSOR

AVON PHARMO CHEM

14TH FEBRUARY 2025

FACULTY OF AGRICULTURAL SCIENCES

SABARAGAMUWA UNIVERSITY OF SRI LANKA

ISSN : 2989-0535