



ICAFE

The 1st International Conference on Agriculture, Food, and Environment

Book of Abstract

Thursday
October 21th 2021

Promoting Technological Innovations in Agriculture and
Food Industry for Sustainable Development

Program Schedule

Thursday, October 21st, 2021

Time	Program
8.30-8.40 AM	Opening by MC
	Sing National Anthem: Indonesia Raya + Mars Bela Negara
8.40-8.55 AM	Chairman Remark
	Rector Opening Speech
8.55-9.10 AM	Keynote speaker Session
9.10-9.55 AM	Session 1 (Moderator: Partoyo, Ph.D)
	Speaker 1: Prof John H.Grove, Ph.D.
	Speaker 2: Prof. Iin P. Handayani, Ph.D.
	Speaker 3: Erni Johan Matsue, Ph.D.
9.55-10.40 AM	Discussion Session 1
10.40-10.45 AM	Presentation of token of appreciation for speakers
	Session 2 (Moderator: Dr. Mofit Eko Poerwanto)
10.45-11.30 AM	Speaker 4: Prof. Paul Holford
	Speaker 5: Prof. Datuk Dr. Mad Nasir Shamsudin
	Speaker 6: Dr. R.R. Rukmowati Brotodjojo, M.Agr
11.30 AM -12.15 PM	Discussion Session 2
12.15-12.20 PM	Presentation of Token of Appreciation for the Speakers
12.20-1.00 PM	Break
1.00-2.00 PM	Parallel Session 1
2.00-3.00 PM	Parallel Session 2
3.00-3.10 PM	Break
3.10-4.10 PM	Parallel Session 3
4.10-4.15 PM	Best Presenter Announcement
4.15-4.30 PM	Closing Ceremony

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Keynote Speaker

DIRECTOR GENERAL OF INDONESIAN AGENCY FOR AGRICULTURAL RESEARCH AND DEVELOPMENT

Dr. Ir. Fadjry Djufry, M.Si

**The First International Conference on Agriculture, Food, and Environment,
UPN “Veteran”, Yogyakarta
October 21, 2021**

Assalamu'alaikum Warahmatullahi Wabarakatuh

Good morning and greetings to all of us

- **Honourable guests**
- **The Rector of Universitas Pembangunan Nasional (UPN) Veteran
Yogyakarta and his staff**
- **Invited Speakers**
- **All Participants**

First, I would like to thank the presence of Allah Almighty for the abundance of grace and the joy that all of us can still gather in this conference of the First International Conference on Agriculture, Food, and Environment today without any barriers at all and in good health. I would like to say congratulation to UPN Veteran Yogyakarta for organizing this wonderful international conference. Also, the theme of the conference “Promoting Technological Innovations in Agriculture and Food Industry for Sustainable Development” is very important for the development of agricultural sectors in Indonesia.

Ladies and Gentlemen

The agricultural sector is one of the main engines of the Indonesian economy, especially for smallholders' livelihood and rural development. In the first 3 months of 2021, agriculture contributed 16.24 % to Gross Domestic Product (GDP). Also, the agricultural sector is the leading contributor to national export, even in the weakening of the world economy due to the Covid-19 pandemic. In 2020, the export value of agricultural commodities reached Rp. 451.55 trillion, or grew by 16.05 percent compared with 2019, where the plantation sub-sectors contribute to 91 percent of the export. Recently, on 14th August 2021, Mr. President Jokowi released agricultural export products simultaneously from 17 ports of seaports and airports in 17 provinces with 61 destination countries. The export products released on that occasion amounted to 627,399 tons worth Rp. 7.29 trillion, of which the contribution of plantation commodities reached 564,550 tons or around 90%.

This huge contribution is supported by the fact that Indonesia is the leading producer of many estate crops. Based on FAO's data in 2019, Indonesia is the largest producer of palm oil, coconut, clove, and nutmeg. Also, Indonesia has the largest area of rubber plantations in the world. Indonesia is also known as the major producer of some important export commodities such as cocoa, coffee, pepper, cashew nut, and many more. Other than its contribution to the national export, estate crops also have vital roles in rural development, increasing farmers' welfare and supporting the development of other sectors.

Dear Sir, Madam, Invited Speakers, and Conference Participants

The estate crops development in Indonesia faced many issues, covering social, economic, and environmental aspects. Even though plantation expansion is considered one of the main causes of environmental externalities such as deforestation and land-use change, which contributes to climate change, estate crop production is also highly affected by the changes in climate pattern. As small-scale farmers still dominate the plantation sub-sector, the productivity is relatively low due to very low technology adoption, especially the superior variety and input application. Also, there is a tendency of increasing pests and diseases attacks which more difficult to control as the impact of climate variability. Price fluctuation and increasing consumer concern on environmental and health issues are also big challenges for smallholder farmers as many of them are still trapped in poverty and dominated by aging farmers.

All of those challenges require sustainable approaches in estate crops development. Many studies show that if the estate crops are developed appropriately, they can contribute to better environmental sustainability rather than as a contributor to environmental destruction. We know that estate crops developments are often accused of environmental issues such as deforestation, land and forest fire, peatland destruction, etc. For this purpose, the application of technological innovation is a must. Following the sustainability concept, sustainable plantation development needs to consider environmental, social, and economic aspects, which have been the focus of agricultural research in the last few decades. The technological innovation resulting from research institutions or universities should be economically feasible, socially accepted, locally adapted, and environmentally sustainable.

Ladies and Gentlemen

Considering the importance of technology innovation on sustainable plantation development and budget and resources constrain, the Ministry of Agriculture, through the Indonesian Agency for Agricultural Research and Development, has resulted many technological innovations to support sustainable plantations, not only for priority crops but also for other commodities.

Superior varieties for the majority of estate crops have been released with the potential advantage in high productivity and quality, resistance to pests and diseases, adaptability to a specific climate condition as well as adaptability to the local environment. To achieve the potential advantage of the varieties, supporting technologies such as good agricultural practices (GAP) are recommended. The GAP is started from land preparation, planting material provision, farm management, pest and disease control, and harvest and post-harvest handling. To minimize the negative effects on the environment, much research has also already invented biofertilizers and biopesticide products, including bioprocessing methods and agricultural waste processing becomes high-value products. In addition, research in estate crops also includes social and institutional engineering to increase the small-scale farmers' capacity and capability to apply sustainable farming systems and increase their welfare.

Finally, the implementation of technological innovation could provide solutions for sustainable estate crops development. Hence, it is essential to accelerate the adoption of the technology by smallholder farmers and help them to access and to apply the technology.

Thank you very much for your attention

Wassalamu'alaikum Warohmatullahi Wabarokatuh

Dr. Ir. Fadjry Djufry, M.Si



Invited Speaker

NUTRIENT MANAGEMENT IN CONSERVATION AGRICULTURE

J H Grove¹

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Abstract

Nutrient management occurs in a context of soil physical, chemical and biological properties and conservation tillage modifies that context. No-till soils are cooler, wetter, possess more porosity and have better structure than tilled soils. Their chemical properties are strongly stratified, intensifying chemical impacts on the soil microbial community. Stratification of phosphorus and potassium generally has positive impacts on crop nutrition. Nitrogen management is particularly challenging in no-till soils and extra care must be taken to avoid losses due to immobilization, leaching, denitrification and volatilization. Reduced soil disruption and greater nitrogen availability act together to increase soil organic carbon levels. Other plant nutrients, though often stratified either by their surface application or upcycling via plant residues, are well managed via soil sampling in support of soil testing and plant tissue analysis. All things considered; crop yield differences due to tillage are not due to nutrient availability limitations. Yield differences due to tillage are due to the interaction of no-till soil properties and other limiting factors, especially moisture in rainfed conservation agriculture.

SOIL HEALTH MANAGEMENT FOR SUSTAINABILITY BEYOND THE PANDEMIC

IIN P. HANDAYANI

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Abstract

The growth in population to 10 billion by 2050, the climate crisis and the COVID-19 pandemic present a monumental challenge to change to regenerative agriculture. It is time to create a future that embraces life by encouraging the health of our soils. In so many ways, a foundation built on how we grow our food is at the heart of this shift; we need to cooperate with nature by linking soil health with human health. In addition, we need to reach sustainability by regeneration in agriculture with forms of agroecology practiced by growers concerned with soil and plant health through improvements in C sequestration, water and nutrient retentions, biodiversity, resilience of ecosystem services and increased farm profitability. Managing soil health beyond the pandemic towards nutrition-enhanced food production is critical to sustain agricultural land to adjust to the food supply and demand. Soil resilience is a key component of overall soil health that can promote sustainable land management. Resilient soils provide basic soil functions such as habitat, biomass production, green house gases mitigation, nutrient and water storages and cycles, and filtering substances. These ecosystem services enable soils to support the fundamental supply of food and natural products required by human population even under high external pressure and have moved the importance of soil functions on the agenda in sustainability science in policy settings. Agriculture in the 21st century is colored by connections between soil and human health which become the backbone of sustainability. This presentation will cover the concept of soil health and soil quality management to enhance the process of regenerative agriculture. Greater focus on this topic will build broad awareness on the importance of soils to human health and show basic soil health indicators that illustrate healthy soils to satisfy the requirements of plants, animals, people and the environment. In summary, the application of soil science must also be linked to the general public - as the food consumer and beneficiary ecosystem services profit from soil health and its management. Growers and land managers who apply sustainability indicators must be rewarded through payments for ecosystem services such as carbon sequestration, soil biodiversity, and water quality.

Keywords: Healthy soils, Pandemic, Regenerative Agriculture, Soil Management, Sustainability

DEVELOPMENT OF LDH (LAYERED DOUBLE HYDROXIDE)-SHEETS FOR DISINFECTION OF BACTERIA IN DRINKING WATER

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Abstract

Many rural residents of developing countries have less access to safe water due to insufficient water purification infrastructure. We developed a sheet embedding LDH (layered double hydroxide) as a tool to disinfect drinking water at home. Mg/Al-LDH and Zn/Al-LDH were synthesized by co-precipitation method from Mg(NO₃)₂ or Zn(NO₃)₂, Al(NO₃)₃, Na₂CO₃, and NaOH solutions at pH 11 with heating at 80 °C for the Mg/Al-LDH, or with aging at room temperature for the Zn/Al-LDH. The products were heat-embedded in a non-woven fabric sheet to obtain LDH-sheets. Shaking the LDH-sheets (LDH mass 0.2 g) with 100 mL water containing 1200 CFU/mL of *Escherichia coli* (DH5α) at 25°C for 24 h decreased the viable count to 530 CFU/mL for the Mg/LDH sheet; 0 CFU/mL for the Zn/LDH-sheet. The viable count increased to 25.1 x 10⁶ CFU/mL for that without the sheets. The decrease in the viable count with the sheets is ascribed to the adsorption of DH5α onto the LDH surface because bacteria are usually negatively charged, and the LDHs have positive charges. In addition, the killing effect might occur in the case of Zn/Al-sheet by releasing a little amount of Zn²⁺ into the water.

Keywords: Mg/Al LDH, Zn/Al LDH, LDH-sheet, *Escherichia Coli*, drinking water

HIGH ALTITUDES LIMIT THE INCIDENCE OF HUANGLONGBING AND ITS VECTOR, *Diaphorina citri*, IN CITRUS ORCHARDS

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Abstract

Citrus fruit are important crops in tropical and subtropical areas of the world and are important sources of carbohydrates, fibre and health-promoting compounds. Like other crops, production of these fruits is affected by a range of pests and pathogens that can affect the sustainable development of citriculture. The most devastating of these is huanglongbing, a bacterial disease caused by species of liberibacters, pathogens that are spread by insect vectors. Currently, there is no cure for the disease, and control relies on the use of disease-free seedlings, removal of diseased trees, and pesticides to suppress populations of vectors. Our studies on HLB in Indonesia and Bhutan have shown that citrus grown at higher altitudes (above 1000–1200 m ASL) can remain free from the main vector of the disease, the psyllid *Diaphorina citri*, despite climatic conditions at these altitudes being favourable for the insect. Thus, sustainable production of citrus at these altitudes without the use of polluting agrochemicals may be possible. However, this would be dependent on the production and use of HLB-free propagation material, strict control on the movement of trees into these areas and the adoption of appropriate agronomic practices for the control of other pests and pathogens.

Keywords: Altitude; Citrus; Huanglongbing; Liberibacters; Psyllids



FOOD SECURITY: ISSUES AND POLICY RESPONSES WITH SPECIAL REFERENCE TO SOUTHEAST ASIA

Mad Nasir Shamsudin

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Universiti Putra Malaysia

Abstract

In developing economies including Southeast Asia, the food sector is facing challenging issues and landscape in terms of supply and demand factors. Underinvestment in agriculture, energy prices, climate change, and resource depletion, particularly arable land and water, have affected production, while continued population and income growth have increased demand for food and changes in consumption patterns. Added to these effects, new dimensions in the price equation are the environmental impacts of modern agriculture and the role of crude oil, food safety and bioenergy. These effects create further constraints on food supply. Enhancing food security is not only to improve health and productivity, but it contributes significantly to social wellbeing, economic development and national and global stability. Thus food security can be improved by enhancing food supply (availability), access to food (accessibility), food quality and safety (utilisation), and food supply stability.

CROP PROTECTION AND ENVIRONMENT: SUSTAINABLE CONTROL MEASURES OF PESTS AND DISEASES

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Abstract

The second Sustainable Development Goals aims to achieve zero hunger, achieve food security and improved nutrition and promote sustainable agriculture. The sustainability can be achieved by maintaining ecosystems, strengthening capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and improving land and soil quality progressively. The challenge in keeping high yield crops is pests and diseases attack. Control measures to suppress pests and diseases should also keep the ecosystems in balance. Pesticides that heavily used for plant protection besides their effectiveness in controlling pests and diseases also possess risks to non-target organisms. To reduce the harmful effect of pesticides, innovative methods to reduce the amount of active ingredients applied have established, including developing new formulation of existing compounds, enhancing the bioactivity of active ingredients and developing models of pest infestation prediction. In addition, there are also new development in plant protection products derived from natural ingredients, new mode of action and biochemical targets. Various cultural methods are considered eco-friendly measures, including habitat and cropping management, sanitation and fallowing. Furthermore, application of biocontrol agents and cultivation of resistant/tolerant crop varieties should be incorporate into plant protection as part of sustainable control methods of pests and diseases.



Oral Presentation Schedule

Breakout Room 1

Agricultural Environment, Ecology and Resources

Moderator : Erni Johan Ph.D - Evaluator : Dr. Ir. Tuti Setyaningrum, M.Si.

Session 1 : 13.10 - 14.00 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-10	Arlyna Budi Pustika	Brown Plant Hopper and Blast Disease in several varieties of rain-fed rice in Gunungkidul Yogyakarta
ABS-13	Rina Ekawati	Chlorophyll Components, Total Flavonoid, Anthocyanin Content and Yield of <i>Eleutherine palmifolia</i> L. (Merr) on Different Shading Levels
ABS-16	Dhian Pertiwi	Yield Trials of Soybean (M7) Mutant Genotipe (<i>Glycine max</i> L. Merrill) Based on High Production and Resistance to Stem Rot Disease of <i>Athelia rolfsii</i> Curzi

Session 2 : 14.00 - 14.50 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-25	Bambang Supriyanta	Estimation of Genetic Diversity of Some Strains Generation S3 <i>Cantaloupensis</i> Melon Hydroponicall Based on Smart Farming System
ABS-27	Muhammad Habibullah	The Appearance of Mutations From Three Varieties of Longan Used Gamma Rays
ABS-29	Dedy Mahyono	Increasing Growth And Production of Corn (<i>Zea Mays</i> L.) With Different Planting Point Patterns And Management of Weeds

Session 3 : 14.50 - 15.50 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-35	Rusdi Evizal	Coffee farming management as impact of the distance of farmers [^] home in Tanggamus District, Lampung Province, Indonesia
ABS-41	Azimmatul Ihwah	Optimization of delignification procces of reed leaves as main raw material for making art paper
ABS-46	Ainin Niswati	Abundance and biomass of earthworm as affected by long-term different types of soil tillage and fertilization on mungbean plantation at Ultisols soil
ABS-49	Mesti Rizki Putri	Coffee spent grain-based biochar [^] s properties and application: A Systematic Review



Breakout Room 2

Agricultural Environment, Ecology and Resources; Soil and Water Management; Smart Technologies in Agricultural System

Moderator : Prof. Dr. Ir. Mohammad Nurcholis, M.Agr - Evaluator : Dr. Ir. Sari Virgawati, M.Eng.

Session 1 : 13.10 - 14.10 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-51	Syafri Edi	Crop Performance and Farming Analyses of ^Merah Delima^ Papaya and ^California^ Papaya on Sub-Optimal Land in Jambi
ABS-78	Danar Wicaksono	Morphologically Diversity of Colletotrichum sp. conidia associated with anthracnose on chili
ABS-83	Partoyo	Integrating GIS and Satellite Remote Sensing to Evaluate Land Suitability for Rice in Sleman Regency, Yogyakarta, Indonesia
ABS-101	RR. Rukmowati Brodjojo	Frost Protection Case Study in Orchards

Session 2 : 14.10 - 15.10 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-9	G Andrew C Beattie	Can Oecophylla Smaragdina Be Used To Suppress Incidence Of Cvpd In Citrus Orchards In Indonesia?
ABS-30	Nenny Nurlaeny	Effectiveness Of K-Fertilizer Residue On Various Of Soil Water Available On Growth, Soil Properties And Yield Of Soybeans In Inceptisols
ABS-40	David Suwito	The Effects Of Canal Blocking On Hydrological Restoration And Natural Regeneration In Degraded Peat Swamp Forest Post-Forest Fires In Central Kalimantan
ABS-66	Ali Munawar	Mercury Pollution From Small Scale Gold Mines In Agricultural Land

Session 3 : 15.10 - 16.00 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-21	Sugeng Priyanto	Products of Cassava Leaves And Cutcherry Leaves From Various Compositions of Organic Intercropping
ABS-23	Novrido Charibaldi and Didi Saidi and Frans Richard Kodong	Precision Agriculture Using Internet Of Things (Iot) In Regosol Soil
ABS-69	Febi Riyanti Azwar	Design of Automatic Pest Trap Using A Yellow-Led Bait On Cucumber Plants



ABS-61	Ifa Aulia Chusna	Integrated Environment Concept: Technology for Processing Agriculture, Cattle Farming, and Household Waste at Kalibaru Wetan Village, Banyuwangi, East Java
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Breakout Room 3

Social and Economic in Agriculture

Moderator : Dr. Jerome Soriano - Evaluator : Dr. Dwi Aulia Puspitaningrum, S.P., M.P.

Session 1 : 13.10 - 14.00 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-37	Imam Suhadi	Role of Corporate Social Responsibility In Reducing Farmers Poverty: A Case Study In Eastern Kalimantan, Indonesia
ABS-38	M. Khalifatul Ardhi	The Impact of Innovation Types on Msmes Performance: Evidence From The Special Region of Yogyakarta, Indonesia
ABS-43	Mirdah Aprilia Amir	Factors Affecting Farmers Willingnes To Pay (Wtp) on Agricultural Insurance Program in Wajo District, Indonesia.

Session 2 : 14.00 - 14.50 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-56	Farid Akbar Al Hafiz	The influence of social-economic on the risk mitigation strategy of beef cattle farmers in Banyuasin Regency, Indonesia
ABS-58	Siti Hamidah	Turgo Tourism Village Development Strategy In Turgo Hamlet, Purwobinangun Village, Pakem District, Sleman Regency
ABS-60	Ali Hasyim Al Rosyid	Factors Influencing the Consumer Purchase Decision Process for Packaged Rice Products in the Special Region of Yogyakarta : Implementation of the Concept of Sustainable Development

Session 3 : 14.50 - 15.50 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-62	Wendy Dimas Cahyadi	Sustainability Partnership Production of Corn Seed Hybrid Between Pt. Agri Makmur Pertiwi, Grower And Sidodadi Farmer Group



ABS-71	Budi Widayanto	Synergy Of Tourism Management In Forest Area (Case Study Tourism on Pengger Hill, Dlingo District, Bantul Regency, Special Region of Yogyakarta)
ABS-82	Agus Santosa	Optimization of the use of Vannamei Shrimp production factors in the Agromijil farmer group, Purworejo Regency
ABS-84	Antik Suprihanti	Response Analysis of Tobacco Supply in Indonesia

Breakout Room 4

Agricultural Sciences and Engineering; Food Science and Technology

Moderator : Dr. R. R. Rukmowati Brotodjojo, M.Agr - Evaluator : Dr. Ir. Oktavia Sarhesti Padmini, M.Si

Session 1 : 13.10 - 14.10 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-1	Sudadi Sudadi	The Use of Biochar and Biofilm Biofertilizer (BiO2) to Increase Rice Yield
ABS-11	Salim Widono	Sensitivity of Bulb Tissue for Detection of Fusarium Causes Moler disease In Shallot
ABS-17	Nazly Aswani, M.Si.	Combination Of Genotype, Plant Spacing, and Plant Density For Improving Growth And Yield Of Garlic National Varieties
ABS-2	Syamsidah Rahmawati	Agrobacterium-mediated transformation of two rice varieties with AtMyb61 gene for lignin content manipulation towards biomass refinery

Session 2 : 14.10 - 15.10 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-28	SH Poromarto	Effectiveness and Compatibility of Bacillus and Trichoderma in Increasing Disease Tolerance of Garlic to Basal Rot caused by Fusarium oxysporum f.sp. cepae
ABS-34	Rudiati Evi Masithoh	The potency of Vis/NIR spectroscopy for classification of soybean based of colour
ABS-36	Fitri Yelli	Effect Of Oxatiapiproline-Famoxadone Fungicide and Trichoderma sp. on Control of Downy mildew and Growth of Maize
ABS-48	Quinnike Aisy Maskurin	Nanoencapsulation of Essential Oils from Polianthes tuberosa with the Addition of Eucalyptol as a Potential Therapy for Anosmia due to COVID-19



Session 3 : 15.10 - 16.10 (UTC+7, Jakarta Time) *Please check your time zone

Paper ID	Presenter	Paper Title
ABS-74	Tan Elfianka Novyza Siagian	THE GROWTH AND YIELD RESPONSES OF SHALLOT (<i>Allium ascalonicum</i> L.) to Plant Spacing and Tuber Cutting by NFT Hydroponic
ABS-77	Prof. Dr. Samanhudi, S.P., M.Si.	Application of Cow Manure and Mycorrhiza on the Growth of Biduri (<i>Calotropis gigantea</i>)
ABS-85	Mofit Eko Poerwanto	Potency of guava shoot extract as a control means against <i>Diaphorina citri</i>
ABS-47	Anastriyani Yulviatun	The Effect of Heat Moisture Treatment (HMT) With Varying Moisture Content and Time on Physical, Chemical, and Physicochemical Properties of Jack Bean Starch (<i>Canavalia ensiformis</i>)
ABS-57	Helmizar Helmizar	Characteristics of Nutrients on Functional Bread with Additional Red Bean, Soya Bean, and Corn as Food Supplementation for Under Five Years Old Stunting Children



List Poster Presentation

Link Video Presentation : https://icafe.upnyk.ac.id/?page_id=495

Paper ID	Topic	Presenter	Paper Title
ABS-52	Agricultural Environment, Ecology and Resources	Rafika Indah Fitriyanti	Analysis of Fat Content of Six Types of Rambutan Seeds (<i>Nephelium lappaceum</i> L.) As Biodiesel Raw Material
ABS-50	Agricultural sciences and engineering	Prof. Dr. Ir. Endang Yuniastuti, M.Si.	Effect of concentration and time of chitosan administration on <i>Pachira</i> breeding (<i>Pachira aquatica</i>)
ABS-55	Agricultural sciences and engineering	Prof. Dr. Ir. Endang Yuniastuti, M.Si.	Effect of NAA and BAP Concentrations on Rambutan Growth (<i>Nephelium lappaceum</i> L.) in Vitro
ABS-64	Social and Economic in Agriculture	Ahmad Nur Rohim	Girirejo Village Micro Small And Medium Enterprises Empowerment Model Through The Wiradesa Program
ABS-73	Social and Economic in Agriculture	Ari Wijayani	Protection of Geographic Indications to Maintain the Quality Of Robusta Coffee on The Slopes of Mt. Arjuna, Welirang, And Bromo
ABS-79	Social and Economic in Agriculture	Liana Fatma Leslie Pratiwi	Development Strategies for Palm Sugar Attributes Products : Competitive Products Towards the Sustainable Development Goals
ABS-70	Soil and Water management	Lelanti Peniwiratri	Potential Of Kirinyuh (<i>Chromolaena odorata</i>) And Cow Manure For Available Phosphor Supply On Sandy Beach Soil And P Uptake By Onion (<i>Allium cepa</i> L.)

Abstracts Topic: Agricultural Environment, Ecology and Resources

[ABS-10]

BROWN PLANT HOPPER AND BLAST DISEASE IN SEVERAL VARIETIES OF RAIN-FED RICE IN GUNUNGKIDUL YOGYAKARTA

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Abstract

There is a challenge to increase the productivity of rain-fed rice in Gunungkidul Yogyakarta. Improvement varieties are suggested increase rice yield. However, brown plant hopper and blast disease are the main constraint in Gunungkidul rain-fed rice area. This research was aimed to determine the population of brown plant hopper and blast disease as the effect of varieties improvement in increasing rain-fed rice productivity. Research was conducted in Nglipar Gunungkidul Yogyakarta, September 2018 to January 2019. Experimental design was randomized block design with 6 treatments and 4 replications. Treatments were six rain-fed rice varieties (Inpago 8, Inpago 10, Inpago 12, Inpago Unsoed, Rindang 1, and Rindang 2). Results showed that Brown Plant Hopper population and blast disease intensity in Inpago 10, Inpago 12, and Inpago Unsoed were lower than in other varieties. Yield of Inpago 8, Inpago 10, Inpago 12, Inpago Unsoed, Rindang 1, and Rindang 2 were 6.20, 7.37, 7.01, 7.49, 6.20, and 6.84 ton ha⁻¹, respectively. Varieties improvement resulted higher rice productivity compared to previous season in farmers practices which produced 4.00 ton ha⁻¹ harvested rice.

Keywords: Rain-fed rice, brown plant hopper, blast disease, improvement varieties.

[ABS-13]
**CHLOROPHYLL COMPONENTS, TOTAL FLAVONOID,
ANTHOCYANIN CONTENT AND YIELD OF *Eleutherine palmifolia* L.
(Merr) ON DIFFERENT SHADING LEVELS**

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Abstract

Eleutherine palmifolia (L.) Merr is one of the horticultural that can be used as a medicinal plant. It was contained flavonoid and anthocyanin. The production of bioactive content on *E. palmifolia* was affected by light intensity. This experiment was conducted at Sukoharjo village, District of Ngaglik, Region of Sleman, Yogyakarta, Indonesia, from May to October 2020. The experiment was laid out with a single factor in a randomized block design (RBD). Three treatments were given, namely no shading, shading 55%, and shading 75%. Each treatment was repeated five times. The result showed that shading gave different effect on physiology and yield of *E. palmifolia*. Shading 55% and 75% produced the number of tiller and bulb of *E. palmifolia* lower than no shading. The fresh bulb weight of *E. palmifolia* in the range between 34.9 - 38.5 g plant⁻¹. The chlorophyll a, chlorophyll b, chlorophyll total, chlorophyll a/b ratio, and chlorophyll b/a ratio content on *E. palmifolia*'s bulb were not affected by different shading given. Shading 75% gave the highest total flavonoid and anthocyanin content of *E. palmifolia*'s bulb was 19.77% and 28.10% than no shading, respectively.

Keywords: bioactive content, Dayak onions, low light intensity, secondary metabolite

[ABS-16]

YIELD TRIALS OF SOYBEAN (M7) MUTANT GENOTIPE (*Glycine max* L. Merrill) BASED ON HIGH PRODUCTION AND RESISTANCE TO STEM ROT DISEASE OF *ATHELIA ROLFSII* CURZI

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Abstract

Soybean consumption (*Glycine max* L.) in Indonesia has increased significantly. The very large demand for soybeans and limited ability to import demand the immediate development of domestic soybeans. One of the inhibitors that can reduce soybean production is a disease caused by the fungus *Athelia rolfsii* (Curzi). The development program needs to be supported by plant breeding as an effort to overcome problems in developing soybean cultivation technology, one of which is by assembling high-yielding varieties that are always accompanied by disease-resistant characters. This study was aimed to determine the level of resistance to stem rot disease of *A. rolfsii* Curzi and production of soybean (M7) mutant genotype under disease stress and optimum condition. This research was conducted in 2019 using an augmented design. The treatments used were 11 mutant genotypes and 3 comparison varieties, anjasmoro variety, argomulyo variety, and kipas putih variety. The results showed that genetic diversity and heritability between genotypes of the M7 generation had high values for each production character except for the characters of flowering age, number of productive branches and weight of 100 seeds. The appearance of agronomic characters observed in agronomic traits on inoculated area by *A. rolfsii* Curzi that caused stem rot disease is lower than the optimum field. Based on the plant sensitivity index, genotype M100A25 (3/7) and M200A12(6/5) had resistant to stem rot disease while M100A25(5/3), M100A25(3/4), M100A6(31/1), M200A11(32/3) had moderate resistance to stem rot disease. The result of strains selection on M7 generation resulted in two strain with high production character and resistance to stem rot disease, M100A25 (3/7) and M200A12(6/5).

Keywords: *Athelia rolfsii*- high production- resistant stem rot disease- sensitivity index- soybean mutant genotype (M7)

[ABS-25]
**ESTIMATION OF GENETIC DIVERSITY OF SOME STRAINS
GENERATION S3 CANTALOUPENSIS MELON HYDROPONICALLY
BASED ON SMART FARMING SYSTEM**

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Abstract

Efforts to minimize failure in melon cultivation can be done by implementing a smart farming system. Increasing the yield and quality of melons can be done by making hybrid varieties. The genetic diversity of the breeding material is very important in the basic population formation stage. This study aims to examine the genetic diversity and heritability of each melon strain S3 generation, so as to determine the strain of the potential to be used as the source material of genetic in the course of breeding. Research is conducted in Greenhouse CV. SG Agroniaga, Maguwoharjo Village, Depok District in the month January 2021 until May 2021. The design of the experiment that used is Complete Randomized Design (CRD) by treatment of a single form of genotypes which consists of 6 levels ie GR-1-3-7, GR-1-3-8, GR-1-3-20, GR-1-3-22, GR-1-2-2, and GR-1-1-3. Each treatment was repeated up to 4 times, so there are 24 units of trial. Each experimental unit consisted of 10 plants. The results showed that the morphology of the S3 generation melon strain in the generative phase contained differences in fruit characters based on net distribution, net intensity, net pattern, fruit aroma, and fruit texture. The value of genetic diversity on the parameters of plant height, male flowering age, harvest age, and fruit weight has a wide genetic diversity. The value of the high percent heritability for the characters of male flowering age, female flowering age, harvest age, and thickness of fruit flesh. The GR-1-3-20 and GR-1-1-3 lines are lines that have greater potential than other lines in terms of selection effectiveness on the parameters of male flowering age and fruit weight, so they are good to use for the next selection process.

Keywords: melon, smart farming system, Greenhouse, diversity of genetic

[ABS-27]

**THE APPEARANCE OF MUTATIONS FROM THREE VARIETIES OF
LONGAN USED GAMMA RAYS**

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Muzayyanah Rahmiyah¹, Noor Farid^{2*}*

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²Program Studi Agroteknologi, Fakultas Pertanian, Universitas Jenderal Soedirman

Abstract

The need for fruit in Indonesia is increasing every year along with the increase in population. The increasing demand for longan fruit with good quality and small seeds (seedless), it is necessary to plant breeding. Longan plant improvement can be done by various methods, one of which is mutation method with gamma ray radiation. This study aims to determine the diversity of longan plant mutants and changes in the character of longan plants due to mutations of gamma ray radiation. In this study, three varieties were used, namely longan Itoh, Wusan, and Kateki with two doses of gamma irradiation, namely 50 and 60 gray (Gy). There are changes in plants, namely in the morphological character and the rate of photosynthesis. The percentage of vegetative propagation was 1%.

Keywords: Gamma Rays, Longan, Mutation.

[ABS-29]
**INCREASING GROWTH AND PRODUCTION OF CORN (*Zea mays* L.)
WITH DIFFERENT PLANTING POINT PATTERNS AND
MANAGEMENT OF WEEDS**

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Abstract

This study aims to determine the pattern of planting points, and to determine the effect of weed control with pre-emergence herbicides on the growth and production of maize. This research was conducted from November 2019 to the end of February 2020 in Sendang Rejo Village, Binjai District, Langkat Regency. The design of this study used factorial split-plot design: Factor I: The planting point pattern (P)- P1 = Single row cropping point pattern (70 cm x 20 cm), P2 = Two row planting point pattern (20 cm x 20 cm, the next row spacing is 70 cm), P3 = Triangular planting point pattern (20 cm x 20 cm, distance with the next row of triangles 70 cm). Factor II: Herbicide Application (H)- H1 = No herbicide application (control), H2 = Weed free (manual control), H3 = applied with dimethenamide-P + saflufenacil 3 days before planting, H4 = applied with dimethenamide-P + saflufenacil at planting, H5 = applied with dimethenamide-P + saflufenacil aged 3 DAP H6 = applied with topramezone + atrazine at 14 DAP, H7 = applied with topramezone + atrazine at 21 DAP. Parameters observed in this study were plant height, amount of leaf chlorophyll and production. The results showed that the pattern of planting points had a very significant effect on plant height at the age of 6 and 8 WAP and total chlorophyll and corn production (*Zea mays* L.). Weed control with pre-emergence and post-growth herbicides had no significant effect on plant height, total chlorophyll and maize production (*Zea mays* L.). However, from this study it was found that the best herbicide application was at H7 (Toppramezone + atrazine at 21 days after planting). While the use of planting point patterns and weed control with pre-emergence and post-growth herbicides interacted significantly with the observation of total chlorophyll, while there was no significant effect on the observation of plant height and maize production (*Zea mays* L.).

Keywords: Planting point pattern, maize, herbicide

[ABS-35]
**COFFEE FARMING MANAGEMENT AS IMPACT OF THE
DISTANCE OF FARMERS' HOME IN TANGGAMUS DISTRICT,
LAMPUNG PROVINCE, INDONESIA**

Rusdi Evizal^{1} and Fembriarti Erry Prasmatiwi²*

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²Department of Agribusiness, Faculty of Agriculture, University of Lampung

Abstract

Tanggamus District is the second largest coffee producer in Lampung Province after West Lampung District. The main production region located at the highland of northern side of Tanggamus namely Sub-district of Air Naningan, Pulau Panggung, and Ulu Belu which bordering with protected forest area. This research was conducted in Sumberejo Sub-district of Tanggamus Regency using survey method and Focused Group Discussion, considering that Sumberejo was the population center and the main coffee producer among Talang Padang ex-subdistrict region. The study involved 3 villages that chosen purposively with 71 respondent of coffee farmers that determined using simple random sampling method, and 3 series of FGD in April 2019 until September 2020. Data was analyzed using both descriptive and quantitative method. The results show that there are 49% sample farmers that grow coffee located at medium (5-19 km) or long distance (15-20 km) from home. There are 25-76% sample farmers work as seasonal migrant who usually (76.5% farmers) come to the garden once a month or once in two months. About 38% of sample farmers have coffee plantations outside Sumberejo Sub-district mainly at Sub-district of Air Naningan and Ulu Belu. Long-distance coffee plantations are characterized by larger landholdings (1.5 ha on average), higher coffee stands per hectare (2,456 trees on average), and are dominated by mature coffee trees (41% farmers) and younger coffee trees (29% farmers). The more distance from home the lower shade trees population is. However more divers of MPTS are found in coffee plantation that located close to home residency. The yield of coffee plantations that are close or medium distance from home ranges 0.75-0.77 ton per hectare per year. Meanwhile, coffee plantations that are located far distance from home get a yield of 0.94 ton per hectare.

Keywords: coffee, home distance, migrant, MPTS, plantation, shade trees, yield

[ABS-41]
**OPTIMIZATION OF DELIGNIFICATION PROCESSES OF REED
LEAVES AS MAIN RAW MATERIAL FOR MAKING ART PAPER**

A Ihwah, I A Dewi, A P Sari, A F R Utami, A P Mumpuni
Universitas Brawijaya

Abstract

Waste is a material that is discarded or wasted from the results of natural or human activities that do not yet have economic value. One type of waste is agricultural waste. Agricultural waste is waste generated from agricultural activities such as fruit harvesting. Examples of agricultural waste include coconut leaves, corn leaves, rice straw, coconut husks, banana stems, and reed leaves. Reed plants is one type of grass plant that can grow on land that has moist or dry characteristics. Art paper is a handicraft product made from fibers derived from plants. Plants used as the basic material for making art paper are plants that contain cellulose. In the process of making paper, the beginning of the process is delignification. This study aims to obtain the optimum treatment in each process of delignification of reed leaves. The analytical method used is the Response Surface method using two factors: CH₃COOH concentration of 85%, 90%, 95% and cooking times of 30 minutes, 60 minutes, and 90 minutes. The optimum treatment for the delignification of reed leaves obtained 90% CH₃COOH concentration with a cooking time of 60 minutes.

Keywords: reed leaves, delignification, RSM, cooking time, CH₃COOH concentration

[ABS-46]
**ABUNDANCE AND BIOMASS OF EARTHWORM AS AFFECTED BY
LONG-TERM DIFFERENT TYPES OF SOIL TILLAGE AND
FERTILIZATION ON MUNGBEAN PLANTATION AT ULTISOLS
SOIL**

Ainin Niswati, Liyana, Dedy Prasetyo, Jamalam Lumbanraja

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35145

Abstract

Long-term tillage and fertilization system have a strong impact on the abundance and biomass of earthworms in agriculture soils, however, enumerating their influence on mungbean plantation remains little studied. The objective of this study was to determine the effect of long-term tillage and fertilization and their interaction on the abundance and biomass of earthworms under mungbean plantations. Two factors of treatments consisted of tillage system (minimum tillage and intensive tillage) and fertilization (without fertilization and fertilization by NPK (15:15:15) + chicken manure) what has been done since the first (2017) to sixth planting season (2020). The hand sorting method was conducted and observed 3 times throughout the planting of mung beans. The results show that the abundance and biomass of earthworms are significantly higher in minimum tillage compared to intensive tillage as well as fertilization compare to without fertilization. The greatest abundance and biomass of earthworms were found in the maximum vegetative of mungbean. The interaction effect occurred at the maximum vegetative observation, namely in intensive tillage, there was no effect of fertilization, on the contrary, at minimum tillage, fertilization increased the abundance and biomass of earthworms. As a consequence, our results indicate that minimum tillage and fertilization significantly improve soil biological quality.

Keywords: Minimum tillage, earthworms, compound fertilization, chicken manure

[ABS-49]

COFFEE SPENT GRAIN-BASED BIOCHAR'S PROPERTIES AND APPLICATION: A SYSTEMATIC REVIEW

Nimas Mayang Sabrina Sunyoto Hendrix Yulis Setyawan* Ika Atsari Dewi* Yeni Erna Widyasari* Mesti Rizki Putri* Rizky Aulia Muji Santoso*

Department of Agro-industrial Technology, Faculty of Agricultural Technology
Universitas Brawijaya, Malang, Indonesia.

Abstract

Abstract. Coffee is one of the most potential commodities in the world, being the second most traded commodity. Currently, it is consumed as the second-largest beverage around the world and has become part of the lifestyle of today's generation. As a result of the increasing number of its utilisation, it generates a considerable amount of waste, the coffee spent grounds (CSG) is one of the instances. In general, the CSG that are produced are only disposed of directly (landfill). On the other hand, CSG still contains carbohydrates, oil, nitrogen and carbon which have the potential to be used to produce several products as a means of valorization, including biodiesel, biopolymers, composites, compost and biochar. The purpose of this study was to systematically review the use of CSG as a feedstock of biochar, conditions of biochar production, its properties and application as an adsorbent of chemicals causing environmental damage. The research method used a systematic review of the selected journals on the topics, then was further analyzed both in the theory and content. The results of the literature review suggest that CSGs have potential use as a feedstock for biochar production and have been researched for an adsorbent on a wide range of pollutants. The CSG biochars are effective adsorbents for cadmium (II), Methylene Blue, Tetracycline, Zn (II) compounds, and ineffective on Sulfamethoxazole compounds.

Keywords: biochar, biorefinery, coffee waste, coffee spent grain, pyrolysis, waste utilisation, valorisation, adsorbent

[ABS-51]
**CROP PERFORMANCE AND FARMING ANALYSES OF “MERAH
DELIMA” PAPAYA AND “CALIFORNIA” PAPAYA ON SUB-
OPTIMAL LAND IN JAMBI**

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Abstract

Papaya is a tropical fruit that has a great demand by the community at an affordable price and can adapt to various types of soil, including sub-optimal land. Jambi province has a quite large area of sub-optimal land. The aimed of the study was to determine the growth, production and farming analysis of Merah Delima and California Papaya on sub-optimal land. The research was carried out at the Agricultural Technology Park in Suka Maju Village, Geragai District, Tanjung Jabung Timur Regency, Jambi. Parameters observed included plant vegetative and generative performance and farming analysis. The results showed that Merah Delima Papaya provided the advantages in production parameters, namely the number of fruit and fruit weight more than the California variety. The analysis of profitable papaya farming has total profit of Rp. 104,736,000,- per hectare for merah delima papaya nd Rp. 61,728,000,- per hectare for papaya California. The results of the analysis of BC ratio value of 2.95 for the papaya merah delima and the BC ratio of 1.95 for the papaya California, indicated that farming these two papaya varieties provides benefits and will feasible to cultivate.

Keywords: papaya, swampy land, Agrucultural Technology Park

[ABS-61]
**INTEGRATED ENVIRONMENT CONCEPT: TECHNOLOGY FOR
PROCESSING AGRICULTURE, CATTLE FARMING, AND
HOUSEHOLD WASTE AT KALIBARU WETAN VILLAGE,
BANYUWANGI, EAST JAVA**

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Abstract

Banyuwangi District is one of the largest areas that have an agricultural land area in East Java. According to the central statistics of the Banyuwangi District report in 2019, Kalibaru Wetan village located in Kalibaru Sub-district has 311 Ha for harvest area and 61.29% for society who work in the agriculture sector. The concept of an integrated environment in agricultural waste, cattle farming waste, and household waste has economic value for society and can support sustainable development. The research aimed to analyze the treatment methods and the potential of agricultural waste, cattle farming waste, and household waste. Furthermore, planning the implementation of an integrated environmental concept as technically in the Kalibaru Wetan Village will be discussed in this paper. The methodology research has begun with collecting primary-secondary data and processing data with the concepts and theories of literary studies. The environmental analysis is used for determining the processing method for wastes so that the processing method can be more sustainable for society. The idea of an integrated environment in this study consisted of activities- processing straw into cattle feed, processing agricultural waste into compost, processing cattle farming waste into biogas, processing bio-slurry into liquid fertilizer, waste sorting programs, and planting training. The integrated concept was sustained and relating concept with the others so that the integrated concept has potential for giving benefit to society if implemented in Kalibaru Village.

Keywords: biogas, compost, integrated environment, waste

[ABS-78]

MORPHOLOGICALLY DIVERSITY OF *Colletotrichum* sp. CONIDIA ASSOCIATED WITH ANTHRACNOSE ON CHILI*Danar Wicaksono¹, Maftuh Kafiya²*¹Agrotechnology Department, Faculty of Agriculture, Universitas Pembangunan Nasional Veteran Yogyakarta, Yogyakarta, Indonesia-²Agribusiness Department, Faculty of Agriculture, Universitas Pembangunan Nasional Veteran Yogyakarta, Yogyakarta, Indonesia¹danarwicaksono@upnyk.ac.id - ²kafiyamaftuh@upnyk.ac.id**Abstract**

The research conducted to observe the diversity of *Colletotrichum* sp. associated with anthracnose on chili. The diversity was observed from morphology of conidia. *Colletotrichum* sp. was isolated from *Capsicum frutescens*, *C. annum* (big chili variety and red curly chili) with anthracnose symptoms. In the isolation process, two isolates were obtained from *C. annum* big chili variety (BA and BB), 5 isolates were isolated from *C. annum* red curly chili (DPTK1, DPTK2, KA, KC, and KD), and 7 isolates from *C. frutescens* (DPTR1, DPTR2, RA, RB, RC, RD, and UPN4). Conidia length, shape, and color were observed. Isolate BA from *C. annum* big chili variety has the longest conidia than other isolate in average (16.10). Isolate RA from *C. frutescens* has the shortest conidia than other isolates (10.05). All isolates have hyaline color. Isolate BA, DPT K-1, RC, RD, and UPN4 have Fusiform shape. Isolate with cylindrical with rounded apices is BB, DPT K-2, KA, KD, DPT R-1, DPT R-2, RA, and RB. Conidia of *Colletotrichum* sp. isolated from *Capsicum frutescens* and *C. annum* have hyaline colour and diversity on the length and shape.

Keywords: anthracnose, chilli, *Colletotrichum* sp., diversity

[ABS-83]
**INTEGRATING GIS AND SATELLITE REMOTE SENSING TO
EVALUATE LAND SUITABILITY FOR RICE IN SLEMAN REGENCY,
YOGYAKARTA, INDONESIA**

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Abstract

Land evaluation is essential for assessing environmental limitations that inhibit higher yield and productivity in food crops, including rice. This research aimed to determine the suitable lands for sustainable rice production in the northern part of the Yogyakarta Special Region using phenological datasets from remote sensing and geospatial datasets of soil-plant biophysical properties. Sentinel-2 satellite images were processed to obtain layers for land use and land cover (LULC) and the normalized difference vegetation index (NDVI). Validation used statistical data of rice productivity from the Agricultural and Fisheries Agency of Sleman Regency. Vector and raster layers of maps were processed in ArcGIS 10.2.1 software. Finally, suitability classes were determined using a weighted overlay of spatial analysis based on reclassified raster layers of all parameters and the results from the multicriteria analysis.

Keywords: satellite- remote sensing- sentinel-2- land suitability- rice

[ABS-101]
FROST PROTECTION CASE STUDY IN ORCHARDS

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Abstract

The objective of the present study was to explore the effect of cooling irrigation on the micro-climate of the plantation. We tested some frost protection methods in the main fruit growing regions of Hungary. The antifrost irrigation proved to be the most advantageous. We analyzed data to set the optimum intervals between spraying phases: with intervals of 15, 10, 5 and 3 minutes, spraying for half a minute. The synchronous presence of water and ice below the freezing point, the released freezing heat plus the water used much above the freezing point (9-10 °C) altogether maintains the temperature above around 0°C near the flowers or growing fruitlets, meanwhile, the surrounding air cools down to - 8 °C. The Frostbuster represents a new technology developed for the same purpose of frost defense. It uses butane burning and produces high (80-90°C) temperature with a strong blast of air. On the protected area, sensors have been distributed for measuring temperature and relative humidity. The means of the measurements proved a rise of temperature, which was sufficient to save the fruit trees until the difference is less than - 3-3.5 °C. Our analyses stated that paraffin candles avert the frost until - 4 °C. Its success depends largely on the intensity of air movements. A small wind would be enough to alter the effect. Overall the antifrost irrigation has the best results while using Frostbuster and paraffin candle combined produces an acceptable effect. The results show that the water sprayed in the orchard by micro-jet influenced decisively the temperature of the plantation. At higher temperatures (around 20°C), the drop of temperature may reach 5-7 °C. A low relative humidity of the air may increase the relative effect. The frequent repetition (20-minute intervals) may keep the temperature low also in the buds.

Keywords: microclimate of orchards, cooling irrigation, blooming delay, frostbuster, paraffin candle

[ABS-9]

CAN *Oecophylla smaragdina* BE USED TO SUPPRESS INCIDENCE OF CVPD IN CITRUS ORCHARDS IN INDONESIA?*G Andrew C Beattie* and Paul Holford*School of Science, Western Sydney University, Locked Bag 1797, Penrith, NSW
2751, Australia**Abstract**

Citrus vein phloem degeneration (kerusakan pembuluh tapis pada jeruk) is the Indonesian name for the Asian form of the devastating and incurable citrus disease known internationally as huanglongbing. It is associated with a phloem-limited pathogen, *Candidatus Liberibacter asiaticus* (CLAs) and transmitted by the Asiatic citrus psyllid (ACP), *Diaphorina citri*. ACP originated in South Asia but was first observed on citrus in 1900 in Java to where it may have been introduced decades earlier on lemon or lime seedlings brought from South Asia to reduce the incidence of scurvy among European sailors and in colonial settlements. CLAs appears to have been introduced to the Pasar Minggu area of Jakarta in the 1940s from southern China, after it was introduced to Guangzhou, directly or indirectly, from South Asia in the late 1920s-early 1930s. Minimising incidence of the disease relies on planting pathogen-free trees, removal of infected trees, and unsustainable use of synthetic pesticides that do not prevent spread of the disease. Parasitoids and predators of ACP are killed by the pesticides. Evidence from China and Vietnam suggests that effective management of the disease may be feasible if the weaver ant (semut rangrang), *Oecophylla smaragdina*, is deployed, cultivated, and managed in orchards.

Keywords: Citrus- *Diaphorina citri*- History- Huanglongbing- Weaver ant

[ABS-52]**ANALYSIS OF FAT CONTENT OF SIX TYPES OF RAMBUTAN SEEDS (*Nephelium lappaceum* L.) AS BIODIESEL RAW MATERIAL**

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Rambutan (*Nephelium lappaceum* L.) is a fruit plant from Indonesia that has potential from roots, leaves, bark, fruit skin and flesh, but the seeds are not utilized and become waste. Rambutan seeds contain fatty acids that have the potential as biodiesel, so it can be used as an energy substitute for depleting oil as well as reduce the environmental impact. This study aims to determine the best oil content of the six types of rambutan seeds that have the potential as biodiesel feedstock. The process of this research was carried out using the Soxhlet Woodman method 1941. The best rambutan seed oil yield was found in the garuda type rambutan seeds of 36.65%, so the germplasm needs to be developed and preserved. The results of the oil test state that rambutan seed oil has a sulfur value, calorific value (HHV and LHV), and a freezing point value of rambutan seed oil, while the boiling point value is below the SNI biodiesel.

Abstracts Topic: Soil and Water management

[ABS-30]

EFFECTIVENESS OF K-FERTILIZER RESIDUE ON VARIOUS OF SOIL WATER AVAILABLE ON GROWTH, SOIL PROPERTIES AND YIELD OF SOYBEANS IN INCEPTISOLS

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Abstract

The aim of this research was to study the effectiveness of K-fertilizer residue on various percentages of soil water availability on growth, soil exchangeable-K, K-uptake and yield of soybean (*Glycine max L. Merr*) cv. Anjasmoro in Inceptisols. This research was conducted in a controlled plastic house laboratory, Agriculture Faculty of Universitas Padjadjaran. Randomized Complete Block Design was used in this experiment. The first factor was soil K-fertilizer residue with four levels (k0 control, k1 1x, k2 1,25x, and k3 residue of 1,5x of recommended doses, respectively) and the second factor was percentage of soil available water with four levels (w1 = 100% w2 = 80% w3 = 60% and w4 = 40% available water, respectively). The results showed that residue of 1,5x recommended dose of K-fertilizer on 100% water available significantly affected growth components (plant height, number of leaves, plant dry weight) and plant K-uptake at 4-6 weeks after plant. Independently, higher soil exchangeable-K was found on control. Higher yield component (weight of 100 seeds) was produced by residue of 1,5x recommended dose of K-fertilizer on 100% soil water available. Compared to control, however, residue of 1-1,25x recommended doses of K-fertilizer were still effective in providing soybean yields (0.93 - 1.40%).

Keywords: K-fertilizer residue, soil available water, soil properties, soybeans (*Glycine max L. Merr*)

[ABS-40]
**THE EFFECTS OF CANAL BLOCKING ON HYDROLOGICAL
RESTORATION AND NATURAL REGENERATION IN DEGRADED
PEAT SWAMP FOREST POST-FOREST FIRES IN CENTRAL
KALIMANTAN**

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Abstract

Tropical peat swamp forest is one of the wetland ecosystems on tropical peatlands with many ecological, economic, and socio-cultural functions. In Indonesia, the peat swamp forest ecosystems have been experiencing deforestation and degradation due to land clearing for plantations and agriculture and forest fires. In Central Kalimantan, especially in the ex-area of the 100 million hectares mega rice project in the 1990s, hydrological restoration is carried out by blocking the canals. We compared the three methods of canal blocking and the areas without canal blocking and the community's preference on what form of canal blocking is more beneficial for them. Large canal blocking, medium canal blocking, and small canal blocking have positively affected the groundwater level in the driest month above the fire-prone critical point. In contrast, the locations without blocking exceed the critical fire-prone water level. Small, large, and medium blocking are equally capable of optimizing the peat soil water table. However, the local communities prefer small blocking over other methods because it is simple, labor-intensive, and improves their livelihood when involved in its construction. The local communities choose the big canal blockings less because they block transportation access in and out of the peat swamp forest.

Keywords: Restorasion, Peat swamp forest, hydrology, canal blocking, restoration

[ABS-70]

POTENTIAL OF KIRINYUH (*Chromolaena odorata*) AND COW MANURE FOR AVAILABLE PHOSPHOR SUPPLY ON SANDY BEACH SOIL AND P UPTAKE BY ONION (*Allium cepa* L.)*L Peniwiratri*^{1,2} and *D Arbiwati*¹¹Department of Soil Science Faculty of Agriculture UPN Veteran Yogyakarta²lelanti@yahoo.com**Abstract**

The low availability of phosphorus nutrients for onion plants resulted in disruption of the plant growth process such as blocking the extension of the root causing the uptake of nutrients decreased. This research was conducted to know role of Kirinyuh (*Chromolaena odorata*) and cow manure for available phosphor of Sandy Beach Soil and P uptake by onion. The research method used was the Completely Randomized Design Method of 15 treatments, namely the mixture treatment of cow manure (S) and *kirinyuh* (K) at 10, 20 and 30 tons/ha equivalent doses. The treatment was: without cow manure and *kirinyuh* (P0), equivalent dose of 10 tons/ha S:K = 100: 0 (P1), S:K = 75: 25 (P2), S:K = 50: 50 (P3), S:K = 25: 75 (P4) S:K = 0: 100 (P5), equivalent dose of 20 tons/ha S:K = 100: 0 (P6), S:K = 75: 25 (P7), S:K = 50: 50 (P8), S:K = 25: 75 (P9) S:K = 0: 100 (P10), and equivalent dose of 30 tons/ha S:K = 100: 0 (P11), S:K = 75: 25 (P12), S:K = 50: 50 (P13), S:K = 25: 75 (P14) S:K = 0: 100 (P15). Each treatment was repeated 3 (three) times. The results were analyzed by variance at 5% significant level and tested further with Duncan Multiple Range Test at 5% level if there was a significant influence. The results showed that the mixture of cow manure and *kirinyuh* could increase P available of Sandy Beach Soil and P uptake of onion. Giving a mixture of cow manure (S) 25% and *kirinyuh* (K) 75% at the equivalent dosage of 30 tons/ha significantly gave the highest P available of Sandy Beach Soil and P uptake of onion.

Keywords: Phosphor, sandybeach, onion, manure, *kirinyuh*



[ABS-66]
**MERCURY POLLUTION FROM SMALL SCALE GOLD MINES IN
AGRICULTURAL LAND**

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Abstract

Small scale gold mines have been taking place in many parts of Indonesia. Despite their significant contribution to the total world gold production, they have been raising environmental problems. The problems have been associated with the use of mercury (Hg) in the amalgamation to separate the gold from the ores. This process produces mercury-containing slurries discharged to surrounding streams, potentially creating water pollution. If the water is used for irrigation to surrounding rice fields, some mercury may stay in streambed and accumulate in irrigated soils and enters the food chain, including human consumption. This research was aimed to assess pollution potential in stream water and rice fields around small scale mines in Lebong District, Bengkulu Province. This research was started from November to December 2018. It consisted of field activities and laboratory analysis. Field activities included collecting 9 water samples, 6 streambed samples, 3 soil samples, and 3 plant samples in different locations. Laboratory activities were carried out at the Soil Science Laboratory, University of Bengkulu and the Integrated Research and Testing Laboratory (LPPT) Gadjah Mada University, Yogyakarta. The results showed that all water, streambed sediment, soil and water samples contained mercury and their concentrations exceeded the threshold values. The highest total Hg for all samples was 0.044 ppm in water, 58.19 ppm in streambed, 15.44 ppm in soil, and 16.85 ppm in rice plants.

Keywords: mercury pollution, small scale gold mines, streambed, agricultural land

Abstracts Topic: Smart Technologies in Agricultural System

[ABS-21]

PRODUCTS OF CASSAVA LEAVES AND CUTCHERRY LEAVES FROM VARIOUS COMPOSITIONS OF ORGANIC INTERCROPPING

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Abstract

An experiment of intercropping cultivation of cassava and cutcherry plants to harvest the leaves that are fertilized organically. The purpose of this experiment was to determine the effect of organic fertilizer on the total leaf yield of each plant, the efficiency of the land area and the efficiency of the time span of its cultivation. The experiment was carried out at the Wedomartani Practical Garden, Faculty of Agriculture, UPN ^Veteran^ Yogyakarta from September 2020 to January 2021, altitude 110 m above sea level, soil type, Regosol The research method was divided plot design with two treatments and repeated three times. The main plots consisted of organic fertilization with manure at a dose of 30 t/ha (P1), 40 t/ha (P2) and 50 t/ha (P3). The sub-plots were intercropped with a composition of 0% cassava + 100% cutcherry (K0)- 25% cassava + 100% cutcherry (S1)- 50% cassava + 100% cutcherry (S2)- 75% cassava + 100% cutcherry (S3)- and 100% cassava + 0% cutcherry (S0). The results showed that the dose of manure had no significant effect, but the intercropping pattern had a significant effect on leaf production. The highest yield of cassava leaves was in the intercropping pattern S3, although it was not significantly different from the intercropping pattern S2, while the yield of cutcherry leaves was almost the same in all intercropping patterns. The best intercropping pattern is the composition of 75% cassava + 100% cutcherry (S3).

Keywords: manure dose, intercropping pattern

[ABS-23]
**PRECISION AGRICULTURE USING INTERNET OF THINGS (IoT) IN
REGOSOL SOIL**

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Abstract

Utilization of information and communication technology in agriculture can be done using the internet of things (IoT) on soil and plants, this is done to monitor the availability of water, nutrients, soil pH and others, so that the use of water, nutrients will be more effective and efficient. This study aims to apply an Internet of Things (IoT) information system to determine soil moisture, pH and soil NPK levels in capillary irrigation and liquid organic fertilizer on mustard growth in Regosol soil. The research method used was Completely Randomized Design (CRD) with two factors. namely liquid organic fertilizer, consisting of 4 levels: P0: No liquid organic fertilizer, P1: Liquid organic fertilizer for household waste 5 liters/ha, P2: Liquid organic fertilizer for Biduri leaves 5 liters/ha, P3: 300 kg/ha NPK fertilizer Ha. The second factor is the number of wick of capillary irrigation, consisting of 3 levels: I0: irrigation with direct irrigation, I1: capillary irrigation with 1 wick, I2: capillary irrigation with 2 wick. The results showed that the soil moisture during the growth of mustard greens was 18.55 to 22.54 percent, the more capillary wick, the higher the soil moisture, the average water requirement for mustard plant growth was 3.16 liters. The application of liquid organic fertilizer and capillary irrigation had a significant effect on soil pH, liquid organic fertilizer had a significant effect on soil NPK levels, but capillary irrigation had no significant effect on NPK levels. Treatment of liquid organic fertilizer and capillary irrigation did not significantly affect the growth of mustard plants.

Keywords: : IoT, capillary irrigation, liquid organic fertilizer, Regosol.

[ABS-69]

DESIGN OF AUTOMATIC PEST TRAP USING A YELLOW-LED BAIT ON CUCUMBER PLANTS

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Abstract

Cucumber is a popular plant that is much needed by Indonesian society. The demand for cucumbers tends to increase every year. In cucumber cultivation activities, the biggest challenge is pest and disease attacks. Continuous pest attack causes growth failure for cucumber plants. For this reason, technology is needed that can reduce pest attacks that damage cucumber plants. The design of the technology is an automatic pest trap that uses solar energy so that it can be placed in the field without an additional electricity supply. This study aimed to design a pest insect trapping system for cucumbers using a yellow-LED as bait. The yellow bait used was assembled using yellow LEDs. The trap system used a microcontroller integrated E18-D50NK infrared sensor and booster fan. The sensor worked to detect the presence of insects, and then the fan pushed the insects into a reservoir filled with water. Tests and observations were carried out for six days (144 hours). The results showed that there were 837 insects detected by the system, while 665 insects entered the reservoir. The number of dead insects in the reservoir was 598 insects. The average duration of falling insects by the fan was 130 seconds. The results of the calculation of the effectiveness between the insects detected and caught were 80.87%.

Keywords: Automatic pest trap, cucumber plants, Infrared sensor, microcontroller, and yellow bait



Abstracts Topic: Social and Economic in Agriculture

[ABS-37]

ROLE OF CORPORATE SOCIAL RESPONSIBILITY IN REDUCING FARMERS POVERTY: A CASE STUDY IN EASTERN KALIMANTAN, INDONESIA

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Abstract

The implementation of CSR in Indonesia is regulated in the Republic of Indonesia Law Number 40 of 2007. Based on these regulations, the implementation of CSR is in line with the goal of sustainable agricultural development, namely improving the welfare of the rural population. To achieve these development goals, cross-sectoral coordination and collaboration is required- the local government, the community, the private sector, and other stakeholders. Among the sustainable development goals that can be collaborated with CSR is poverty reduction in the agricultural sector. There have been many studies on CSR disclosure in the company's perspective, but an overview of the role of CSR implementation in agriculture in reducing farmer poverty is still limited. This study aims to (1) determine the poverty level of farmers before receiving CSR assistance, (2) estimate the poverty level of farmers after receiving CSR assistance, and (3) to determine the impact of CSR assistance on reducing farmers' poverty levels. The poverty measurement method is based on the poverty criteria of the Central Bureau of Statistics, the Headcount Index, Poverty Gap Index, and Poverty Severity Index. Meanwhile, to find out the impact of CSR assistance, it is seen through the difference in poverty levels before and after receiving CSR assistance and is tested statistically.

Keywords: Corporate Social Responsibility, Farmers Poverty, Headcount Index, Poverty Gap Index, Poverty Severity Index



[ABS-38]
**THE IMPACT OF INNOVATION TYPES ON MSMEs
PERFORMANCE: EVIDENCE FROM THE SPECIAL REGION OF
YOGYAKARTA, INDONESIA**

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Abstract

Innovation has played a critical role as an organizational practice in driving business growth, income generation, and sustainable competitiveness, especially because of its perceived impact on the development of the micro, small and medium enterprises (MSMEs) sector. Research on the relationship of various types of innovation to business performance continues to be studied by several researchers. The purpose of this study was to examine the effect of the main types of innovation, namely product and process innovation, on the performance of MSME coffee shops which are one of the potential business sectors and grow significantly in the Special Region of Yogyakarta. This study was conducted on 80 samples of MSME coffee shops which were selected purposively with convenience sampling technique and analyzed using the Partial Least Square-Structural Equation Modeling (PLS-SEM) method. The results showed that product and process innovation had a positive and significant effect on the business performance of MSME coffee shops. This finding implies that innovation is the main pillar for coffee shop entrepreneurs to create new market opportunities, be able to survive in the midst of the COVID-19 pandemic, and even be able to grow sustainably through improving the quality of products and services for customers.

Keywords: Business Performance, Coffee shop, Innovation Types, MSMEs, PLS-SEM



[ABS-43]
**FACTORS AFFECTING FARMERS WILLINGNES TO PAY (WTP) ON
AGRICULTURAL INSURANCE PROGRAM IN WAJO DISTRICT,
INDONESIA.**

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Abstract

Agricultural insurance is a government program that aims to reduce the level of risk of farmers' losses in rice farming. However, in the implementation process, the number of farmers participating in this program is still very far from the target set. This is presumably due to the influence of farmers' willingness to pay on the agricultural insurance program. This study aims: (1) to determine the amount of Willingness to Pay (WTP) of farmers on the agricultural insurance premium and (2) to analyze the factors that influence the farmers' Willingness to Pay (WTP) on the premium of agricultural insurance. This research was conducted in Wajo Regency, South Sulawesi. The study was conducted on 146 rice farmers in the April-September 2019 planting period using the cluster random sampling technique. To estimate the amount of WTP was used Contingent Valuation Method (CVM). The Ordinary Least Square (OLS) method was used to analyze the data. The results showed that the WTP value of farmers was IDR 43,119 per cropping (IDR 36,000/ha/cropping season). Income, ownership status, and claim status are factors that have a significant effect on the WTP value of agriculture insurance premiums.

Keywords: Agriculture insurance, contingent valuation method, insurance premium, willingness to pay

[ABS-56]
**THE INFLUENCE OF SOCIAL-ECONOMIC ON THE RISK
MITIGATION STRATEGY OF BEEF CATTLE FARMERS IN
BANYUASIN REGENCY, INDONESIA**

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Abstract

This study aims to analyze the influence of the social economic characteristics of beef cattle farmers on the risk mitigation strategy used by beef cattle farmers in Banyuasin Regency. This study employed a descriptive method using a survey as the main strategy of data collection. The study was carried out in two disaster-prone subdistricts in Banyuasin Regency, namely Tanjung Lago and Muara Telang. The sample selection of farmer respondents used a quota, based on which there were 30 farmers from each subdistrict. Therefore, according to the simple random sampling method, 60 farmers were involved in this study. The influence of the social economic characteristics of beef cattle farmers on the risk mitigation strategy was analyzed using regression analysis logistics using the SPSS 25 program. The results showed that the average age of farmers is within the productive age. The average number of family members is four people. The longest farming experience is eight years. The number of livestock ownership of each farmer is three livestock units (LU). The average income of farmers is still below the district minimum wage. Beef cattle farmers in Banyuasin Regency tended to apply risk reduction (85%) and avoidance strategies (15%). The number of livestock owned ($p < 0.05$) and farmers' income in one month ($p < 0.10$) were factors that affect farmers' opportunities to carry out risk mitigation strategies. It could be concluded the large number of cattle tends to reduce the opportunity for farmers to carry out risk reduction strategies in conducting beef cattle business. This means that the greater the number of livestock owned, the higher the probability of farmers to avoid risk. If the number of livestock owned is increasing, the possibility of loss will also increase. Therefore, farmers tend to avoid these risks rather than reducing all potential risks.

Keywords: Banyuasin Regency, Socio-Economic Characteristics, Beef Cattle, Risk Mitigation Strategies

[ABS-58]
**TURGO TOURISM VILLAGE DEVELOPMENT STRATEGY IN
TURGO HAMLET, PURWOBINANGUN VILLAGE, PAKEM
DISTRICT, SLEMAN REGENCY**

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Abstract

Turgo Tourism Village is one of the Tourism Villages in Sleman Regency, located in a disaster-prone area of Mount Merapi, and was hit by hot clouds or ‘Wedhus Gembel’ in 1994. It is about 17 km from the government center of Sleman Regency, located on the slopes of Merapi, has interesting natural scenery with a beautiful Mount Merapi background. Some of the tourism potentials are: Merapi Forest, Ritual Tourism, the process of making coffee and tea in a traditional manner, culture and traditional arts. During the Covid-19 Pandemic, visitors have greatly decreased, let alone activity, moreover the activity of Mount Merapi often increases, so that it is increasingly rare and even almost no visitors from outside. For this reason, it is necessary (1) to identify the internal and external environmental factors of the Turgo Tourism Village, in the form of Strengths, Weaknesses, Opportunities and Threats, (2) to know alternative development strategies that can be applied. Analysis using Focus Group Discussions, Matrix of Internal-External, SWOT and QSPM analysis, give the following results: (1) The strengths of the Turgo Tourism Village are: natural beauty, traditional culture and arts, interesting specialty drinks and food products. The weaknesses are: a disaster-prone area, and business management is individual. The opportunities are: the trend of Nature and Ritual Tourism is increasingly popular with the community, there is support from the Regional Government and Universities. While the threats that exist are: the danger of hot clouds, and quite a lot of tourist villages in the vicinity. (2) Alternative Development Strategies be applied are: (a) Improving Knowledge and Skills of Disaster Mitigation Turgo Tourism Village Managers take advantage of the support of the Local Government and Universities to Guarantee Security and Safety for visitors, (b) developing the existing potential becomes the hallmark of the Turgo Tourism Village in order to win the competition with

Keywords: Tourism Village, Disaster-Prone Areas, Internal-External Environmental factors, Development Strategy

[ABS-60]

**FACTORS INFLUENCING THE CONSUMER PURCHASE DECISION
PROCESS FOR PACKAGED RICE PRODUCTS IN THE SPECIAL
REGION OF YOGYAKARTA : IMPLEMENTATION OF THE
CONCEPT OF SUSTAINABLE DEVELOPMENT**

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Abstract

Rice is a strategic commodity in the Special Region of Yogyakarta because it is a staple food product. The Government of the Special Region of Yogyakarta has committed to realizing food security by implementing the SDGs (Sustainable Development Goals) with the aim of ending hunger and increasing food access. Food security of a region is seen from availability, accessibility, security and sustainability. Purchasing decisions are influenced by external and internal factors that continue to change along with changing conditions so that safe and sustainable food supply is needed. The objective of this study is to determine the factors that influence the consumer purchasing decision process for packaged rice in the Special Region of Yogyakarta. The method used to analyze the consumer purchasing decision process for packaged rice products in the Special Region of Yogyakarta was likert scale assessment followed by factor analysis. The consumer purchasing decision process for packaged rice went through five stages, which were the introduction of needs, information collection, evaluation of alternatives, purchase decisions, and post-purchase. Based on the results of factor analysis, obtained four new factors which influence the decision to purchase packaged rice. The first factor is the service and accessibility factor. The second factor is the price factor and product attributes. The third factor is the internal factors of consumers and products. The fourth factor is the product promotion.

Keywords: Factor Analysis, Purchase Decision, Rice, Sustainable Development

[ABS-62]

SUSTAINABILITY PARTNERSHIP PRODUCTION OF CORN SEED HYBRID BETWEEN PT. AGRI MAKMUR PERTIWI, GROWER AND SIDODADI FARMER GROUP*Wendy Dimas Cahyadi, Siti Hamidah, Budi Widayanto*Master of Agribusiness Study Program, Faculty of Agriculture, Universitas
Pembangunan Nasional “Veteran” Yogyakarta**Abstract**

The partnership relationship will be sustainable if the results of cooperation occur repeatedly and are mutually beneficial. This process continues until it creates a rule or norm of business relations in the pattern of partnership behavior. In this condition, the partnership relationship can be said to have been institutionalized, and will even last forever. The continuity of the partnership relationship can be determined by the values or stable positive behavior patterns of the partners. Therefore, there is a need for a study of (1) the role of each partnering party, namely PT. Agri Makmur Pertiwi, grower and Sidodadi Farmer Group, and (2) sustainability of partnership in hybrid corn seed production. The research uses qualitative methods with the type of case study research. The technique of determining the informants is done purposively. Data collection techniques by observation, interviews, and documentation, while data analysis techniques using source and time triangulation techniques. The results of the study show that (1) The role of the company includes establishing an MoU, providing source seeds, loan for fertilizer capital costs, field supervision, quality control, mentoring, and supplying production inputs. The role of the grower is none other than ensuring the existence of land, distributing seeds, production inputs, borrowing capital costs, and maintaining plants until harvesting. Meanwhile, the role of the Sidodadi Farmers Group is to provide land, collect farmer data, manage seeds, and care for harvesting. (2) The partnership program can continue with several conditions from several parties, namely from the Sidodadi Farmer Group requesting that prices at the farmer level be increased, while from the grower requesting that the supply of pesticides and medicines not be late, while the company requests that corn seeds produced by the provisions of the company.

Keywords: The Role of Partnership Actors, Partnership Sustainability, Hybrid Corn Seed Production



[ABS-71]

SYNERGY OF TOURISM MANAGEMENT IN FOREST AREA (CASE STUDY TOURISM ON PENGGER HILL, DLINGO DISTRICT, BANTUL REGENCY, SPECIAL REGION OF YOGYAKARTA)

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Abstract

The implementation of fair and sustainable forest management is the answer to the demands of the democratization process, community empowerment and local self-reliance. Synergy in forest management can optimize the objectives of forest function sustainability and improve the welfare of the people living around the forest. Research shows that the synergy between the government and the community in managing tourism in forest areas with a cooperative mechanism can regenerate the values of local wisdom, deliberation and mutual cooperation in managing forests. The synergy between the government and the community can increase community welfare in the short term and environmental sustainability in the long term.

Keywords: Synergy, tourism management, welfare, environmental sustainability

[ABS-82]
**OPTIMIZATION OF THE USE OF VANNAMEI SHRIMP
PRODUCTION FACTORS IN THE AGROMIJIL FARMER GROUP,
PURWOREJO REGENCY**

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Abstract

This research was conducted at the Agromijil Farmer Group, Purworejo Regency. The aims of this study were: (1) to analyze the effect of production factors and (2) to analyze the optimization of the use of Vannamei shrimp production factors. The basic method of research used is descriptive method. The research method used was survey method and the research location was determined by using the purposive method. The sampling method was simple random sampling using the Slovin formula with a sample size of 43 farmers from total population of 70 farmers. Kinds of data used in this research are primary data and secondary data. Data collection methods used by means of observation, interviews and documentation. The analysis technique used is the Regression analysis of the Cobb-Douglas production function and optimization analysis. Based on the research results, it was found that 1) production factors in the form of pond area, number of fry, feed, probiotics, calcium, and labor affected the production of vannamei shrimp in agromijil farmer groups- and 2) production factors, the pond area, amount of fry, feed, probiotics, calcium, labor is not optimal.

Keywords: Production, Factor of Production, Optimization, Vannamei Shrimp



[ABS-84]
RESPONSE ANALYSIS OF TOBACCO SUPPLY IN INDONESIA

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Abstract

Tobacco is one of important commodities in Indonesia. The control of tobacco and less incentives on tobacco production has caused tobacco production is growing slowly. It impact on income and welfare of tobacco farmers will decrease. Object of this research are to analyze factors that influence tobacco supply in terms of area cultivated and quantity of tobacco production, also to analyze tobacco supply response of factors influenced. Method of the research used descriptive method which using time series secondary data for 30 years from 1990 to 2019. Data are taken from institutions and literatures. Analysis method used partial distributed lag Nerlove's model that is popular in supply response studies which used Ordinary Least Square. Results of this research indicated that tobacco supply in Indonesia response to the wage of labour, planted area, and trend of technology.

Keywords: supply response, area planted, production, tobacco

[ABS-64]

**GIRIREJO VILLAGE MICRO SMALL AND MEDIUM ENTERPRISES
EMPOWERMENT MODEL THROUGH THE WIRADESA PROGRAM**

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The Village Sustainable Development Goals (SDGs) are an integrated effort that includes 18 development goals in solving village's problems. The SDGs are a real effort to accelerate sustainable development at the village level to create villages without poverty, hunger, and equitable national economic growth. One way to achieve this is by building empowered rural micro small and medium enterprises. Therefore, it is necessary to analyze the micro small and medium enterprises empowerment program to train village entrepreneurs to develop their businesses in a sustainable manner. This study aims to determine the right empowerment program to be applied to micro small and medium enterprises and identify stakeholders who help implement the program. Determination of the research area using a purposive method, namely village owned enterprises and meatball home industry in Girirejo Village, Imogiri, Bantul, D.I.Y. The sampling method was carried out by purposive sampling using certain criteria. The data used are primary and secondary data using data collection methods in the form of observation, interviews, and documentation. The data was then analyzed using SOAR analysis (Strength, Opportunity, Aspiration, and Result). The results showed that the empowerment programs needed by micro small and medium enterprises include production, marketing, and financial management training.

Keywords: SDGs, Empowerment, micro small and medium enterprises

[ABS-73]

**PROTECTION OF GEOGRAPHIC INDICATIONS TO MAINTAIN THE
QUALITY OF ROBUSTA COFFEE ON THE SLOPES OF MT.
ARJUNA, WELIRANG, AND BROMO**

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Abstract

Robusta coffee is grown on Mount Arjuna, Welirang, and Bromo in East Java can get legal protection as a geographical indication. This study analyzes the need for Robusta coffee to get legal protection as a Geographical Indication to maintain coffee quality. This study uses qualitative methods with data collection techniques consisting of interviews, observations, and documentation. The researchers selected these respondents according to the categories studied and had coffee plantations on Mount Arjuna, Welirang, and Bromo. The results showed that coffee is grown on Mount Arjuna, Welirang, and Bromo deserves to be registered for Geographical Indications. The average coffee beans produced have a physical quality of Quality 1 and Quality 2. The taste of coffee with the resulting aroma is caramelly and spicy.

Keywords: *Robusta Coffee, A Geographical Indication, Coffee Quality*



[ABS-79]

**DEVELOPMENT STRATEGY FOR PALM SUGAR PRODUCT
ATTRIBUTE: A COMPETITIVE PRODUCT TO ACHIEVING
SUSTAINABLE DEVELOPMENT GOALS (SDGs)**

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Abstract

Coconut palm sugar products are sugar products mostly produced by farmers and MSMEs. The creative and innovative concepts of palm sugar products can be performed by developing product innovations, packaging and marketing. The development of palm sugar products based on consumer preferences can be used as an effort to develop competitive agribusiness products to achieving Sustainable Development Goals (SDGs). One aspect of sustainable development is economic sustainability resulting from the growth of the community's economic sector from both on-farm and off-farm activities. This study aimed to analysed consumer preferences and strategies for developing palm sugar product attributes. The research location was selected by purposive sampling in the Special Region of Yogyakarta. The data analysis used fishbein multi-attribute and Important Performance Analysis Matrix. The results showed that consumer preferences for palm sugar products are determined from the attributes of price, packaging, health benefits&nutritional content, sugar-spice-blend innovation, expiration date, preservatives, organicity, halal status, shape&size, color, taste&aroma, aesthetics, solubility, hygiene, durability, promotion, accessibility, and discount. The strategy for developing palm sugar product attributes is to increase the attributes of sugar-spice-blend innovation and accessibility, as well as maintain the attributes of health benefits, nutritional content, expiration date, organicity, halal status, taste, hygiene, and durability.

Abstracts Topic : Agricultural sciences and engineering

[ABS-1]

THE USE OF BIOCHAR AND BIOFILM BIOFERTILIZER (BiO2) TO INCREASE RICE YIELD

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Abstract

The use of biochar can improve the physical, chemical and biological properties of the soil. The application of biochar is expected to further increase the effectiveness of BiO2-biofilm biofertilizer in supporting rice growth so that it can provide higher yields. The purpose of this study was to obtain the optimal formula for the use of biochar and BiO2 for rice yields. The study was conducted in a greenhouse using a pot with a split plot design with three replications. The first factor (main plot) is the concentration of BiO2 (0 and 100 %), the second factor (sub plot) dose of biochar (0- 15 and 30 tons ha⁻¹) and the third factor (sub-plot) method of use (mixed homogeneously to soil and is given at soil surface). The biochar used is sized to pass the 2 mm sieve. Observation variables include plant growth and yield as well as physical, chemical and biological properties of the soil. Statistical analysis using ANOVA followed by Duncan's multiple range test. The results showed that the use of biochar up to a dose of 30 tons ha⁻¹ in the application of 100% concentration of BiO2 liquid biofertilizer showed an increase in rice growth.

Keywords: Biochar- Biofilm- Biofertilizer- rice- eco-friendly agriculture

[ABS-11]
**SENSITIVITY OF BULB TISSUE FOR DETECTION OF FUSARIUM
CAUSES MOLER DISEASE IN SHALLOT**

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Abstract

Moler caused by *Fusarium oxysporum* f.sp. *cepae* is a seed-borne disease, so the disease intensity in the field is depend on the amount of initial inoculum in the infected bulbs as seed. Therefore, the detection of seed-borne pathogens is important to determine the potential of their transmission. The aim of this research was to evaluate the sensitivity of the bulb tissue of shallot based on the pathogen Infection Index by incubation method on agar media. The experiment was conducted using a completely randomized design with five replications and three varieties of shallots (Thailand, Bima, and Bauji). Each treatment unit was placed in a Petri dish with a diameter of 20 cm, containing 40 mL PDA on which 16 pieces of tissue at the tip, middle, and base of the bulb tissues were placed, which were incubated for 7 days. Pathogen Infection Index is a parameter that was observed macroscopically and microscopically. The results showed that the base of the bulbs tissue of the three varieties tested showed higher sensitivity than the other part to detect the presence of *F. oxysporum* f.sp. *cepae* in shallot.

Keywords: *Fusarium oxysporum* f.sp. *cepae*, seed-borne pathogen, Moler disease, shallot, seed detection

[ABS-17]
COMBINATION OF GENOTYPE, PLANT SPACING, AND PLANT DENSITY FOR IMPROVING GROWTH AND YIELD OF GARLIC NATIONAL VARIETIES

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Abstract

Indonesia has been the largest garlic importing country for decades since the productivities and qualities of national garlic varieties failed to meet domestic demand. Breeding garlic for higher yield conventionally is almost impracticable due to its flowering hinderance, meanwhile the biotechnological approach needs longer time to implement the result. Thus, the most feasible improvement might be done through agronomic aspects. This research was aimed to search for alternative ways in cultivation techniques to improve garlic production. The research was conducted from June 2020 until February 2021 on IVEGRI's Margahayu experimental station, Lembang, West Java. A split-split plot design was laid out for the combination between varieties as the main plot, plant spacing as the subplot, and plant density (number of seed cloves planted on each planting hole) as the sub-sub plot. The results showed that among all characters observed, the significant interactions between these three factors occurred only in the number of stomata, and seed bulb diameter (4 months after harvested). Meanwhile, the significant interactions either between variety and plant spacing or variety and plant density were recorded in the percentage of the 1st week population, fresh weight per sample, weight after curing per sample, dry weight (4 months after harvested) per sample and weight loss per sample. Pseudo stem diameter was significantly affected by the interaction only between variety and plant density, meanwhile bulb diameter after curing was affected by variety and plant spacing separately. However, the height of dried bulb and number of chlorophyll (SPAD) showed highly significant differences only among the varieties.

Keywords: garlic, national varieties, plant spacing, plant density, weight loss

[ABS-2]

AGROBACTERIUM-MEDIATED TRANSFORMATION OF TWO RICE VARIETIES WITH AtMyb61 GENE FOR LIGNIN CONTENT MANIPULATION TOWARDS BIOMASS REFINERY

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Abstract

The Atmyb61 gene plays an important role in lignin biosynthesis. Lignin is potentially used for renewable chemicals and biomaterials. This study was aimed to modify the lignin content of two rice varieties Nipponbare (ssp Japonica) and Rojolele (ssp Javanica). The AtMyb61 gene under the control of a strong constitutive promoter CaMV 35S was transformed into those rice varieties mediated by the *Agrobacterium tumefaciens* strain LBA 4404. From this *Agrobacterium* transformation, a total of 192 putative transgenic plants were obtained, of which 85 and 18 putative transgenic plants for Nipponbare and Rojolele, respectively. The highest regeneration efficiency (57.73%) and transformation efficiency (10.20%) was obtained from rice cv Nipponbare. Meanwhile, regeneration and transformation efficiency of rice cv Rojolele was, consecutively, almost two times (28.93%) and four times (2.25%) lower than that of rice cv Nipponbare. In planta HPT leave assay showed that 85 (68.55%) and 18 (26.47%) plants of rice cv Nipponbare and Rojolele, respectively, expressed hygromycin phosphotransferase indicated that the rice plants positive contained inserted genes. Further evaluation on the expression of rice genes related to lignin biosynthesis, lignin content, and other physiological and agronomical characters will be carried out.

Keywords: *Agrobacterium*-mediated transformation, Atmyb61 gene, rice, lignin

[ABS-28]

EFFECTIVENESS AND COMPATIBILITY OF BACILLUS AND TRICHODERMA IN INCREASING DISEASE TOLERANCE OF GARLIC TO BASAL ROT CAUSED BY *Fusarium oxysporum* f.sp. cepae

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Abstract

The main obstacle to garlic cultivation is the attack of *Fusarium oxysporum* f. sp. cepae (FOCe) causes basal rot. *Bacillus* and *Trichoderma* are popular antagonist microorganisms that can act as biological control agents (BCA). This paper would like to report on the effectiveness and compatibility of *Bacillus* sp. and *Trichoderma* sp. as a biological control of basal rot of garlic based on laboratory and Greenhouse tests. The results of in vitro studies show that *Bacillus* and *Trichoderma* are potential antagonist agents through antibiosis and even *Trichoderma* through competition. Meanwhile, in vivo, the two biological control agents were not effective in reducing wilting intensity but effective in reducing basal rot intensity and increasing disease tolerance. Increasing disease tolerance is showed by the yield that is higher significantly than those control with no BCA. *Bacillus* sp. and *Trichoderma* sp. have been shown to be incompatible BCA based on both in vitro and in vivo tests, which are indicated by the effectiveness of the combination application being less effective than alone.

Keywords: *Fusarium oxysporum*, *Bacillus*, *Trichoderma*, basal rot, garlic



[ABS-34]

THE POTENCY OF Vis/NIR SPECTROSCOPY FOR CLASSIFICATION OF SOYBEAN BASED OF COLOUR

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Abstract

Soybean in various colour is easy to identify using human eyes. However, it is hard to perform manual method for on-line production. Therefore, detection of colour for sorting the soybean is important especially for industries which require a rapid and real-time task. This research was conducted to study the potency of a modular type of VIS/NIR spectroscopy at wavelength of 350-1000 nm to classify black, green, and yellow of soybean seed and flour. Principal component analysis (PCA) and PCA Linear discriminant analysis (PCA-LDA) were used based on various spectra pre-processing techniques. Results showed that PCA-LDA model was able to classify soybean seeds of 97% accuracy and soybean flour of 100% accuracy.

Keywords: soybean, Vis/NIR, spectroscopy, classification

[ABS-36]

EFFECT OF OXATHIPIPROLINE-FAMOXADONE FUNGICIDE AND *Trichoderma* sp. ON CONTROL OF *Downy mildew* and GROWTH OF MAIZE

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Abstract

Downy mildew caused by *Peronosclerospora* spp. is a major limiting factor in maize production in Indonesia. Susceptible variety can have yield losses of around 90 to 100%. The use of metalaxyl fungicide continuously was triggered resistance to downy mildew pathogens. Therefore, it is necessary to have other fungicides that can replace the use of metalaxyl. In this study, the oxathiapiproline-famoxadone fungicide will be tested in combination with the fungus *Trichoderma* sp. as an alternative to metalaxyl. This study used a Randomized Complete Block Design (RCBD). The treatments were arranged in factorial with 2 factors. The first factor was fungicide (without/F0 and with fungicide/F1). The second factor was *Trichoderma* sp., i.e.: T0 (Without *Trichoderma* sp), T1 (*Trichoderma* sp. 10⁶ spores/ml), T2 (*Trichoderma* sp. 10⁷ spores/ ml), and T3 (*Trichoderma* sp. 10⁸ spores/ml). The results showed that the oxathiapiproline-famoxadone fungicides were able to suppress downy mildew, while the application of *Trichoderma* sp. did not affect the control of downy mildew and maize plant growth. Fungicide treatment and *Trichoderma* sp. 10⁷ spores/ml suppressed disease severity at 7 days after inoculation with *Peronosclerospora* sp.

Keywords: Corn, Disease, Induced resistant, Pathogen

[ABS-48]

NANOENCAPSULATION OF ESSENTIAL OILS FROM POLIANTHES TUBEROSE WITH THE ADDITION OF EUCALYPTOL AS A POTENTIAL THERAPY FOR ANOSMIA DUE TO COVID-19*Quinnike Aisy Maskurin^{1*}, Intan Salsabila Putri¹, Sania Isma Yanti¹, Indira Prakoso¹, Wenny Beki Sunarharum¹*¹Department of Agricultural Product Technology, Faculty of Agricultural Technology, Universitas Brawijaya, Indonesia

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Abstract

Olfactory therapy with essential oils can improve the ability to smell and become one of the strategies to relieve anosmia. Tuberose essential oil formulated with eucalyptol can be a new strategy for olfactory therapy by exploring new sources of essential oils. The unstable characteristics of essential oils can be improved by nanoencapsulation. This research was conducted by formulating the essential oil of midnight flower with eucalyptol through sensory testing. The nanoencapsulation process was carried out with nanosilica on a magnetic stirrer for 24 hours. The characteristics of essential oil nanoencapsulation were tested by SEM, chemical component analysis by FTIR and GCMS and stability test by evaporation rate test. The 1:2 formulation (tuberose flower: eucalyptol) was obtained as the best result of the sensory test. The GCMS and FTIR tests confirmed the main components of the tuberose essential oil formulation and eucalyptol, namely 1,8-cineole which was stable after the nanoencapsulation process. The nanoencapsulation process in formulated essential oils is known to have an average shrinkage percentage (6.664%) which is much lower than essential oils without encapsulation (10.145%). Nanoencapsulation increased the stability and activity of the active components of tuberose essential oil and eucalyptol.

Keywords: 1,8-cineole- eucalyptol- mesoporous nano-silica- nanotechnology- olfactory therapy



[ABS-74]

THE GROWTH AND YIELD RESPONSES OF SHALLOT (*Allium ascalonicum* L.) TO PLANT SPACING AND TUBER CUTTING BY NFT HYDROPONIC

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Abstract

Shallot (*Allium ascalonicum* L.) is a horticultural commodity that has good potential to be developed in Indonesia. To overcome uncertain climatic conditions and demand that continues to increase along with the increase in population in Indonesia, it is necessary to develop technology in shallot cultivation that using NFT hydroponic system. This research was carried out with the aim to determine the interaction between plant spacing and tuber cutting on the growth and yield of shallot. The study used a two-factor split-plot design replicated 3 times. The main plot used plant spacing consisting of 3 levels (10x10 cm, 10x15 cm, and 10x20 cm) and the subplot used the tuber cutting consisting of 3 levels (without cutting, cutting 1/3 parts, and cutting 1/4 parts). Data on growth and yield parameters were recorded and subjected to analysis of variance (ANOVA) at a 5% level. The results showed that there were no interactions between plant spacing and tuber cutting of the shallot's growth and yield. The treatment of tuber cutting produced tangible growth and yield, but there were no significant differences between the kinds of plant spacing.

Keywords: Shallot, NFT Hydroponics System, Plant Spacing, Tuber Cutting

[ABS-77]

APPLICATION OF COW MANURE AND MYCORRHIZA ON THE GROWTH OF BIDURI (*Calotropis gigantea*)*Samanhudi*^{1*}, *Sri Hartati*¹, *Muji Rahayu*², *Mochammad Danny Sukardan*³, *Nadia Alifia Rahma*²¹Study Program of Agrotechnology, Faculty of Agriculture, Universitas Sebelas Maret, and Center for Research and Development of Biotechnology and Biodiversity, LPPM Universitas Sebelas Maret, Jl. Ir. Sutami 36A Surakarta 57126 - Indonesia

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²Study Program of Agrotechnology, Faculty of Agriculture, Universitas Sebelas Maret, Jl. Ir. Sutami 36A Surakarta 57126 - Indonesia³Center for Textile, Agency for Standardization and Industrial Services Policy, Jl. Jend. A. Yani 390 Bandung 40272 - Indonesia**Abstract**

Biduri (*Calotropis gigantea*) is a herbaceous plant that has a lot of potentials yet farmers do not cultivate it properly. For instance, many farmers apply inorganic fertilizers excessively which can damage the environment, so that they do not embody environmentally-friendly agriculture. One of the efforts to achieve sustainable agriculture is the use of organic fertilizers. This research was carried out from March 2021 to October 2021 at the screen house, field laboratory of Jumantono, Soil Biology laboratory, Chemistry and Soil Fertility laboratory, and laboratory of Plant Physiology and Biotechnology, Faculty of Agriculture, Universitas Sebelas Maret. This research used a Randomized Complete Block Design (RCBD) with two factors and three replications. The first factor is cow manure which consists of three levels: K0 = without manure, K1 = 10 tons/ha, K2 = 20 tons/ha. The second factor is mycorrhiza which consists of four levels: M0 = 0 g/plant, M1 = 5 g/plant, M2 = 10 g/plant, M3 = 15 g/plant. The data obtained were analyzed by analysis of variance and DMRT. The results showed that the interaction between cow manure and mycorrhiza was not increase the growth of biduri- giving a dose of cow manure 20 tons/ha gives best result for the yield of plant height, stem diameter, number of leaves, and number of branch- mycorrhizal administration was not increase the growth of biduri.

Keywords: Biduri, *Calotropis gigantea*, cow manure, mycorrhiza

[ABS-85]
**POTENCY OF GUAVA SHOOT EXTRACT AS A CONTROL
MEANS AGAINST *Diaphorina citri***

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Abstract

CVPD is the most devastating disease on citrus production in Indonesia and in the world. It is vectored by *Diaphorina citri*. Guava leave extract is a prospective control means for reducing vector population. Research was conducted to investigate the repellent effect of guava shoots to adult of *D. citri* (psyllids) and its predator *Menochilus sexmaculatus*. Repellent effect of grinded dried upper shoot of red, white, and non-seed guava shoots to psyllids of mixed gender were determined in Y-tube olfactometer. Variation of proportion of guava leaf: citrus leaf (0:3; 1:1; 1:2; 2:1; 3:0) of guava shoots which had highest repellent effect also tested to the psyllids and its predator. The result showed that guava shoots had repellence effect to psyllids. The effect was reduced as the increase of drying temperature. Highest repellence effect was found from red guava shoots, followed by non-seed and white guava. Repellent effect of upper red guava shoots was 63.3%, 73.3%, and 76.7% on the proportion of 1:2, 1:1, and 2:1 respectively. However they did not have any repellent effect to *M. sexmaculatus*. The repellency was dose dependent and it increased with the increasing of guava leaf proportion.

Key words: *Diaphorina citri*, guava, CVPD, vector, *M. sexmaculatus*.



[ABS -50]

**EFFECT OF CONCENTRATION AND TIME OF CHITOSAN
ADMINISTRATION ON PACHIRA BREEDING (*Pachira aquatica*)**

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Abstract

Pachira is an ornamental plant that can be used as biodiesel, because of the high fat content in the seeds. Biodiesel is an alternative fuel that can be used to replace fossil fuels. By using biodiesel as a fuel, it will support a sustainable agricultural system that can produce energy for other sectors outside of agriculture. *Pachira* plant breeding has not been widely carried out in Indonesia, so the potential use of *pachira* seeds as biodiesel has not been highlighted. This research was conducted to determine the concentration and timing of chitosan administration for *pachira* breeding. The study was conducted in Blora Regency using a completely randomized block experimental design (RAKL) with two treatment factors, namely concentration and time of administration. The concentration was divided into three levels, namely 1%, 2% and 4% concentration, the time of administration was divided into three levels, namely in the morning, afternoon, morning and afternoon. The administration of chitosan was carried out every week as much as 20 ml according to the treatment. Maintenance carried out is to pour 50 ml of water every day on all research samples. The results showed that treatment with a concentration of 4% and watering in the afternoon could stimulate plant height growth at the beginning of the seedling phase, having the most leaves, producing greener leaf colors and having wider roots.

[ABS-55]

EFFECT OF NAA AND BAP CONCENTRATIONS ON RAMBUTAN GROWTH (*Nephellium lappaceum* L.) IN VITRO*E Yuniastuti^{1*}, D G Chintiana², Sukaya¹ and I I S Putri²*¹ Department of Agrotechnology, Faculty of Agriculture, Sebelas Maret University, Surakarta, Indonesia² Undergraduated School, Department of Agrotechnology, Faculty of Agriculture, Sebelas Maret University, Surakarta, Indonesia

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Abstract

Sustainable farming systems are agricultural system that are environmentally friendly. Biodiesel is one type of alternative fuel for renewable energy that is environmentally friendly with low CO₂ and sulfur gas emissions. Rambutan (*Nephelium lappaceum* L.) may be used as biodiesel fuel substitute for fuel oil because it contains high fatty acids. Rambutan seed fat can be used in high premium specialty fats. It is necessary to breed rambutan plants through in vitro culture to overcome the availability of raw materials and the quality of seed production. The success of increasing crop productivity followed by environmental sustainability is the application of an environmentally friendly sustainable agricultural system. The main aim of this research is to find out the best growing regulatory substances and varieties in the growth of rambutan plants *in vitro*. It was carried out using a completely Randomized Design with two treatment factors. The first factor was varieties consisting of rapiah, binjai, ace and the second factor was the growth regulator type consists of four levels: 0 ppm, NAA 0.5 ppm, BAP 4 ppm, NAA 0.5 ppm + BAP 4 ppm. The results showed that the combination treatment of NAA 0.5 ppm + BAP 4 ppm was able to produce an average when the fastest shoots appeared (13.33 DAP), the average when the fastest leaves appeared (20.67 DAP), the average number of leaves (4 leaves), the average number of the fastest roots (21 DAP), the average number of roots (3 roots) and the longest average root is 3.67 cm in the binjai variety.

Abstracts Topic: Food Science and Technology

[ABS-47]

THE EFFECT OF HEAT MOISTURE TREATMENT (HMT) WITH VARYING MOISTURE CONTENT AND TIME ON PHYSICAL, CHEMICAL, AND PHYSICOCHEMICAL PROPERTIES OF JACK BEAN STARCH (*Canavalia ensiformis*)

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Abstract

Jack bean (*Canavalia ensiformis*) is a local legume growing in sub-optimal land in Indonesia. It is a potential source of starch containing 61.15% of carbohydrates and 33.32% of protein. Starch has typically limited application on food products due to its weak characteristics, such as unstable on heat and shear treatment. Heat Moisture Treatment (HMT) is one of the methods to improve starch durability during processing. HMT is favoured since it leaves no chemical residue. This study aimed to investigate the effect of 110°C HMT in different moisture contents and durations on jack bean starch properties and to obtain the best treatment resulting in the desired starch properties. This study used a Completely Randomized Design (CRD) with two factors, moisture contents (27%, 30%, 33%) and time (10h, 13h, 16h). The results suggested that HMT significantly decreases whiteness, and moisture content. At the same time, it increases water absorption, swelling power, and solubility. The variation of moisture contents and time of HMT was strongly associated with the changes of starch properties, except for amylose and amylopectin contents. The best treatment obtained in this study was the HMT that applies 33% of moisture content for 10 hours (HMT 33%+10 h).

Keywords: HMT- Jack Bean- Starch Modification

[ABS-57]

CHARACTERISTICS OF NUTRIENTS ON FUNCTIONAL BREAD WITH ADDITIONAL RED BEAN, SOYA BEAN, AND CORN AS FOOD SUPPLEMENTATION FOR UNDER FIVE YEARS OLD STUNTING CHILDREN

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Abstract

Stunting is a part of wider nutrition crisis found in one out of four children under five in Indonesia. functionally, the bread made from red beans, soya beans, and corn was categorized as functional bread. Functional food is contains nutritional components that are useful and effective for health such as amino acid, protein, vitamin, mineral which also supports physical growth and brain development of stunting children. The study design was True Experimence using Completely Randomized Design (CRD). This study was initiated with the analysis of biochemical nutritional value at a Food technology laboratory in Andalas University. The result shows that in 100 grams of bread which contain additional flour of 30 grams red beans, 30 grams soya beand, and 20 grams corn, has nutritional value of 43,64 grams carbohydrate, 16,91 grams protein, 10,38 grams fat, and 335,6 kcal of calories. Nutrients in the bread with additional red bean, soya bean, and corn is potential as food supplementation, especially for under five years old stunting children.

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Keywords: Functional bread- food supplementation- stunting- under five years old children

