UNIVERSITAS JEMBER

ABSTRACT BOOK

ICALS 2020

ICALS 2020

The 4th International Conference on Agriculture and Life Sciences (ICALS)

RETOUCHING STRATEGY FOR EXPLORING POTENCY OF INDUSTRIAL CROPS FOR HEALTH IN ADAPTING TO THE NEW NORMAL ERA

FACULTY OF AGRICULTURE
UNIVERSITY OF JEMBER

POST GRADUATE PROGRAM
UNIVERSITY OF JEMBER

Pusat Unggulan Ipteks Perguruan Tinggi
Bioteknologi Tanaman Industri
(PUI-PT BioTin)

IsDB
البنك الإسلامي للتنمية
Islamic Development Bank

Place : Jember, Indonesia

Date : October 6th-8th, 2020

Website : icals.unej.ac.id

ABSTRACT BOOK

THE INTERNATIONAL CONFERENCE ON AGRICULTURE AND LIFE SCIENCE 2020

October 6th-8th, 2020
Jember, East Java, Indonesia

"Retouching Strategy for Exploring Potency of Industrial Crops for Health in Adapting to the New Normal Era"

This International Seminar will be conducted by strong interrelationship among the institutions as depicted below.

Person in Charge

Dr. Ir. Iwan Taruna, M.Eng (Rector University of Jember)

Steering Committee

1. Ir. Sigit Soepardjono, M.S., Ph.D (Dean Faculty of Agriculture)
2. Prof. Dr. Ir. Rudi Wibowo, M.S. (Postgraduate Director)
3. Prof. Tri Agus Siswoyo, S.P., M.P., Ph.D (Chairman of PUI-BioTIn)
4. Honest Dody Molasy, S.Si. M.A. (PIU Executive Director - IsDB)

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Chairman	: Wahyu Indra Duwi Fanata, S.P, M.Sc., Ph.d
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Webinar Series	1. Hardian Susilo Addy, SP., MP., Ph.D (Ko.) 2. Moh. Ubaidillah, S.Si., M.Sc., Ph.D 3. Ahmad Zainuddin, SP., M.Si 4. Feri Handoko, A.Md.

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Seminar, Workshop	1. M. Rondhi, S.P, M.P., Ph.D (Ko 2. Dr. Ir. Arthur Frans Cesar Regar M.Sc.Agr 3. Dr. Desi Cahya Widianingrum, S.Pt 4. Dr. Laily Ilman Widuri, S.P
Proceedings and publications Scientific	1. Ir. Hari Purnomo, M.Si., Ph.D. DIC (Ko.) 2. Dr. Nur Widodo, S.Pt., M.Si 3. Roni Yulianto, S.Pt., M.P., Ph.D 4. Ali Wafa, S.P., M.P 5. Agung Sih Kurnianto, S.Si., M.Ling
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Foreword from Chairman Committee ICALS 2020

Assalamualaikum Wr. Wb.

First and foremost, it is my great pleasure to welcome all of our distinguished forum guest and invited speakers, presenters, and participants of the 4th International Conference on Agriculture and Life Sciences 2020 (ICALS 2020). It is an ongoing effort by the Faculty of Agriculture University of Jember, starting from 1st ICALS as International Seminar and Workshop of Plant Industry (ISWPI) on 2017, the International Seminar and Workshop of Plant Industry (ISWPI) on 2018, 3rd International Conference on Agriculture and Life Sciences (ICALS 2019) on 2019.

1. The ICALS is proudly co-organized with Faculty of AgricultureUniversity of Jember, Graduate Program University of Jember, Implementation Programs Unit of Islamic Development Bank University of Jember, and Center of Excellence on Crop Industrial Biotechnology (PUI-PT-BioTIn).
2. In this ocassion, I would like to inform you that this eventconsists of three programs including webinar series that have successfully held on the last month, the International seminar that start from today until tomorrow, and workshop of organic farming for sustainable agriculture that will be held on the day after tomorrow. The International seminar presents keynote speakers, from the University of Jember and from the Ministry of Agriculture, Republic of Indonesia. Also, the guest and invited speakers from South Korea, Japan, Belgium, Germany, and Indonesia also will participate in this conference to share their knowledge and expertise.

ICALS 2020 is remotely attended by 1262 participants from academician, researchers, students, farmers, private business, governments from total8countriesand 9 provincesin Indonesia. Among this number, 160 participants will disseminate their scientific result related to this conference topic, "**Retouching Strategy for Exploring Potency of Industrial Crops for Health in Adapting to The Normal Era"**.

Last but not least, I would like to express blessed gratitude to our University for their support to this conference and also, a heartfelt wish to all the committee involved in ICALS 2020, without you, ICALS 2020 will not be a reality.

Representing the organizer, I proudly welcome all of you at ICALS 2020. Wishing all participants, fruitful and memorable experience for these three (3) days.

Thank you.

Wassalamualaikum Wr. Wb.

Wahyu Indra Duwi Fanata, S.P, M.Sc., Ph.d
The ICALS 2020 Chair

SCHEDULE OF ICALS 2020
"Retouching Strategy for Exploring Potency of Industrial Crops for Health in Adapting to the New Normal Era"

Tuesday, October 6th, 2020. International Conference and Symposium

Time (GMT+7)	Program	Remarks
07:30 - 08:00	**Preparation**	
08:00 - 08:25	**Opening Ceremony**:	**MC**
	Profile of ICALS, University of Jember, and Faperta	
	National Anthem "Indonesia Raya"	
	Hymne University of Jember,	
	Report by General Chairman of ICALS	
	Welcoming remark by Dr. Ir. Iwan Taruna, M.Eng. Rector of University of Jember	
08:25 - 08:30	Pray	Ahmad Zainudin, S.P., M.Si
Plenary Session I		
08.40 - 09.25	**Keynote Speaker 1**	Moderator: **Prof. Dr. Ir. Rudi Wibowo, M.S**
	Ir. Syafaruddin, Ph.D	
	Head of Indonesian Center for Estate Crops Research and Development	
	"Strategy for Stimulating the Production of Healthy Food and Medical Compounds from Industrial Plants during New Normal Era**"**	
09.25 - 10.10	**Keynote Speaker 2**	
	Prof. Ir. Achmad Subagio, M.Agr., Ph.D	
	Head of Institute of Research and Community Service University of Jember	
	"The Potential Of Industrial Crops For The Development Of Nutritious Foods"	
Plenary Session II		
10.20 - 10.50	**Guest Speaker 1**	Moderator:
	Prof. Tri Agus Siswoyo, S.P., M.Agr., Ph.D	

	Head of Center of Excellence on Crop Industrial Biotechnology University of Jember	**Hardian Susilo Addy, S.P., M.P., Ph.D**
	"The Potential Of Industrial Crops for The Production of Nutraceutical Compounds**"**	
10.50 - 11.20	**Guest Speaker 2**	
	Dr. Rika Terano	
	Universiti Putra Malaysia	
	"Economic Importance and Market Share of Dietary Supplement from Industrial Crops**"**	
11.20 - 11.50	Discussion	
11.50 - 13.00	Break	

Tuesday, October 6th, 2020. Symposium and Pararel Session Room A: "Agronomy and Food Sciences" and "Smart Education for Plant-based Diet"

Link zoom:
https://zoom.us/j/99793429127?pwd=QksrbjFOV3JXTGJtYlVhUGRyZnFLQT09
Meeting ID: 997 9342 9127
Passcode: icals2020

Time (GMT+7)	Program		Remarks
12:45 - 13:00	**Preparation**		Committee
Invited Speaker			
13.00 – 13.10	**Opening**		**Moderator: Dr. Ir. Parawita Dewanti, M.P**
13:10 – 13.35	**Invited Speaker I: Dr. Ketut Anom Wijaya** **Faculty of Agriculture University of Jember** Agronomy and Food Sciences		
13.35 – 14.00	Discussion		
Parallel Session			
A1 **Moderator: Dr. Ir. Parawita Dewanti, M.P** **Time: 14.00 – 17.00** **Presentation : 10' Discussion: 5'**	1	Dina Istiqomah, S.P., M.Sc.	The abundance of predator species in early vegetative phase of rice in banyumas regency
	2	Sarah Ashoba	Effect of plating system and biochar applications in different irrigation on physiological characteristics of corn (*Zea mays* L)
	3	Dr. Tri Candra Setiawati, MSi	The effectiveness of k-bearing minerals dissolution by potassium-solubilizing bacteria in liquid culture
	4	Hari Purnomo	Virulence of *steinernema* spp. An entomopathogenic nematodes indonesia isolates against larvae of white grub lepidiota stigma f (coleoptera: scarabaediae) in the laboratory condition
	5	Risqa Naila Khusna Syarifah, S.P., M.P.	Survei kelimpahan hama belalang (*Genosula mundata*) pada padi sawah di empat tipe lokasi persawahan yang berbeda sebagai tolak ukur dalam penerapan pertanian organik yang berkelanjutan di era new normal

	6	Nisa Budi Arifiana, S.ST	Giberelin and phosphorus aplicatiion in growth, production and the quality of okra pods (*Abelmoschus esculantus* L. Moench)
	7	Hardian Susilo Addy, S.P., M.P., Ph.D	Chitosan from crab shell as natural coating materials and protecting agent on red chili against anthracnose
	8	Dr. Amarullah, SP., MP	Uji adaptasi pertumbuhan dan produksi 4 (empat) varietas kacang hijau (*Vigna radiata* L) pada lahan pesisir
	9	Dr.Ir. Makhziah, M.P.	Genetic variability parameters of maize (*Zea mays* L.) Mutant irradiated gamma ray
	10	Dr. Haliatur Rahma, S.Si., MP	Selection of endophytic bacteria from rice plants to control bacterial leaf blight by *Xanthomonas oryzae* pv.oryzae
A2 **Moderator: Suci Ristiana, S.TP., M.Sc** **Time: 14.00 – 17.00** **Presentation : 10' Discussion: 5'**	1	Dr. Ir. Slameto, M.Si.	Study on production of several soybean varieties with corn intercropping system on dry land in east Lampung, Lampung province
	2	Dr. Zozy Aneloi Noli	Effect of Liquid Seaweed Extracts as Biostimulant on Vegetative Growth of Soybean (*Glycine max* L.)
	3	Dr. Rumella Simarmata	The Role of Endophytic Bacteria and Mycorrhizae Fungus as Plant Growth Inducer of White Tumeric
	4	Listy Anggraeni M.Sc	Effect of auxine and cytokinin combination and tuber size on shallot growth and production
	5	Dr. Kisman, MSc	Quantitative responses, heritability, and correlation of soybean genotypes under drought stress
	6	Ari Istanti, S.P., M.P.	The Growth Responses of Hitam Melik Black Rice, The Local Variety of Banyuwangi by Manures Application
	7	Nurul Istiqomah, SP, M.Si	Concentration of npk liquid foliar macro nutrient and the dosage of phonska npk fertilizer to improve the quality of red chilies (*Capsicum annum* L.)

	8	Dr. Ir.Slameto, MP	Selection of Arabica Coffee Varieties Against Resistance to Leaf Rust Disease based on Flavonoid Content
	9	Ir. Wayan Wangiyana, MSc(Hons), Ph.D.	Effects of relay-planting several peanut rows on yield of two maize varieties at different row spacing
	10	Muh. Afif Juradi, SP MP	Adaptation test of various dry-land composite corn varieties in Sigi regency, Sulawesi Tengah
A3 **Moderator: Widya Kristiyanti Putri, S.Pd., M.Si** **Time: 14.00 – 17.00** **Presentation : 10' Discussion: 5'**	1	Mulyati	Lettuce (*Lacttuca sativa* L.) Growth and soil characteristics as affected by biochar and inorganic fertilizer
	2	Ir. P.E.R. Prahardini, MP	Performance of TSS Growth and Production in East Java
	3	Ir. Wagiyana, MP.	Biological Control of White Grubs (Lepidiota stigma L;Coleoptera:Scarabaeidae) With Entomophatogenic Nematodes and Fungus *Metharizium anisopliae* (Metsch)
	4	Dr. Dwi Setyorini, SP. MP.	Effect of organic fertilizer on the growth and results of sweet corn (*Zea mays saccharata*)
	5	Dr. Alberth Soplanit	Response of sweet potato yield components to stakes angle and mulch type: Sweet potato cultivation in the Papua highlands
	6	Ir. Wayan Wangiyana, MSc(Hons), Ph.D.	Effect of additive intercropping with peanut and organic-silicate-biofertilizer combinations on growth and yield of shallots
	7	Dina Omayani Dewi, SP, MSc	Increasing Productivity and Intensity of Planting with Intercropping of Soybean Corn and Mung Beans in Rainfed Rice Fields
	8	Ir. Azri, MSi	Soil fertility improvement of ex-mining of bauxite for growth and production of corn in West Kalimantan
	9	Herna Febrianty Sianipar, Apriani Sijabat, et al	The effective of arbuscular mycorrhiza on growth of petai plant (*Parkia speciosa*) in metal tainted soil pb
	10	Riza Ulil Fitria	Population dynamics of *Diaphorina ctri* with the implementation of integrated management of healthy

			orange gardens (PTKJS) and CVPD detection with PCR engineering
A4 **Moderator: Ir. Kacung Haryono, M.S.,Ph.D** **Time: 14.00 – 17.00** **Presentation : 10' Discussion: 5'**	1	Prof. Ir. Nanik Setyowati, MSc., PhD.	Sweet Corn Yield and Growth under Different Incubation Time for Tithonia Enriched Liquid Organic Fertilizer
	2	Wara Asfiya, M.Sc.	Attack intensity of Spodoptera frugiperda (Lepidoptera: Noctuidae) on corn crops in West Java: a preliminary survey
	3	Abdurrahman Salim	Determination of agronomic properties of tobacco (*Nicotiana tabaccu*m L.) voor-oogst on chross production using path analysis
	4	Anella Retna Kumala Sari, M.P.	The Agronomy Performance and Financial Feasibility of Hybrid Maize Varieties for Consumption and Cattle Feed in Different Planting System
	5	Feira Budiarsyah Arief	Cultivation without Burn in Peat Land to Reducing the Impact of Climate Change
	6	Listya Purnamasari	The Application of Compost Block from Coffee Husk and Animal Manure As a Nurseries Media of Cayenne Pepper Plants
	7	Listya Purnamasari, S.Pt., M.Sc.	The Application of Plant Growth Promoting Rhizobacteria As a Growth Promotor Mustard Greens (*Brassica juncea* L.)
	8	Junaidi, SP, MSc.	Wind Damage and Yield Recovery in Hevea Rubber Plantation
	9	Hikma Ellya, S.P., M.P.	Leaf morphology of Brazilian spinach (*Alternanthera sissoo*) as a backyard vegetable during the Covid-19 pandemic
	10	Wiwiek Sri Wahyuni	A biological agent may not appropriate for controlling all plant pathogens
	TOTAL PARTICIPANTS ROOM A: 40		

Tuesday, October 6th, 2020. Symposium and Pararel Session Room B: "Agronomy and Food Sciences" and "Smart Education for Plant-based Diet"

Room B Link Zoom:
https://us02web.zoom.us/j/81207838853?pwd=Y3BEcVVOSTBWREswUXVKaTg2NlVWdz09
Meeting ID: 812 0783 8853
Passcode: icals2020

Time (GMT+7)	Program	Remarks
12:45 - 13:00	**Preparation**	Committee
Invited Speaker		
13.00 – 13.10	**Opening**	**Moderator: *Erlia* Narulita, S.Pd,M. Si., Ph.D**
13:10 – 13.35	**Invited Speaker I : Ariza Budi Tunjung Sari, S.TP., M.Si**	
	Indonesian Coffee and Cocoa Research Institute (ICCRI)	
	Agronomy and food science	
13.35 - 14.00	**Invited Speaker II: Dr. Farida Wahyuningtyas, SKM., M.Kes**	
	Faculty of Public Health University of Jember	
	Smart Education for Plant-based Diet	
14.00 – 14.25	**Invited Speaker III: Ns. Tantut Susanto, M.Kep, Sp.Kep.Kom, Ph.D**	
	Faculty of Nursing Health University of Jember	
	Smart Education for Plant-based Diet	
14.25 – 15.00	Discussion	

Parallel Session			
B1 **Moderator: Erlia Narulita S.Pd., M.Si., Ph.D** **Time:**	1	Estu Wilujeng	Lipid Lowering Effect Of Fermented Red Dragon Fruit (*Hylocereus Polyrhyzus)* In Rats Fed On High Cholesterol Diet.
	2	Nisa Nur Laily Asyrofiyah	Determination of classification model and phytochemical content extract methanol of juwet leaves in different altitude using NIR Spectroscopy And Chemometric
	3	Yuni Mumpuni	Determination of the antioxidant and antidiabetic activity of cocoa leaves extract using in vitro study

15.00 - 17.00 **Presentation: 10'** **Discussion: 5'**	4	Ahya Natasya	The anti-inflammatory effect of ethanolic stem extract from vaccinium varingiae folium on plantar thickness of carrageenan-induced mice
	5	Dr. Ir. Soenar Soekopitojo, M.Si.	The antioxidant capacity of herbal teas made from jackfruit (*Artocarpus heterophyllus*) leaves and spices
	6	Yeyen Prestyaning Wanita, S.TP., M.MA	The quality improvement of uwi flour (*Dioscorea alata*) through the fermentation process
	7	Dr. Andi Yulyani Fadwiwati, S.Pt., M.Si.	Analysis of carrying capacity of food crop waste as contributive of beef cattle feed related to the availability of animal protein in Gorontalo district new normal adaptation period
	8	Yeyen Prestyaning Wanita, S.TP., M.MA	The effect of chrysanthemum leaf and sugar composition in manufacturing ready to drink beverages, and its added value analysis.
	9	Dr. Andi Yulyani Fadwiwati, S.Pt., M.Si.	Potential of food crop waste as one of beef cattle feed providers supporting meat self-sufficiency in Gorontalo district during the new normal period
B2 **Moderator: Hasbi Mubarak, S.Tp.,M.Si** **Time: 15.00 - 17.00** **Presentation: 10'** **Discussion: 5'**	1	Nurul Chairiyah, S.Si., M.Si.	The correlation between glucomannan, calcium oxalate and crystal density in porang (*Amorphophallus muelleri* blume) corms
	2	Erlin Susilowati, S.P	Free Radical Scavenging And Angiotensin I-Converting Enzyme Inhibitor Potency Of Red And Black Pigmented Rice Seed Protein
	3	Dr. dr. Hairrudin, M.Kes	The Preventive Effects Of MOCAF-Based Analog Rice On The Pathogenesis Of T1DM Through Improvement Gut Microbiota Composition
	4	Retno Utami Hatmi, ST., MSc.	The effect of the polishing process and sorgum type (brown and white) on the content of crackers nutrition
	5	Jhon David h, STP	Post-Harvest Harvest Management For Extensive Save
	6	Muhammad Ghufron Rosyady, S.P. M.P.	Nutrition Management Of Arabica Coffee Based On SSNM Technology (Site-Specific Nutrient Management)

	7	Ir. Abdul Majid, MP.	The Role Of Rhizobacteria To Control Rhizoctonia Disease And To Improvement Plant Growth Of
	8	Dr. Ir. Denna Eriani Munandar, M.P.	Screening Of Drought Tolerance Brown Rice Mutant With Ethyl Methansulfonate (EMS)
	9	Dian Purbasari, S.Pi., M.Si	Quality Characteristics of cooked rice with water-to-rice ratio from several local paddy varieties in East Java, Indonesia.
B3 **Moderator:** **Dr. Laily Ilman Widuri, S.P** **Time:** **15.00 - 17.00** **Presentation:** **10'** **Discussion:** **5'**	1	Dr. Tri Marwati	Preservation Using Galangal Extract And Nanozeolite With Individual Packaging Of Lowdensity Polyethylene To Support The Export Of Zalacca (Salacca Edulis Reinw)
	2	Avif Firdausy Septian, S.TP	Food Safety Assay of Alergenityon Sugarcane (*Saccharum officinarum* L) Genetic Engineering Products Coat Protein Resistant SCMV Virus (Sugarcane Mozaic Virus)
	3	Dr. Nur Widodo, S.Pt., M.Sc	The Effect Of Binahong Leaf Meal (*Anredera Cordifolia* (Ten.) Steenis) As Feed Additive On Digestive Organs Profile Of Broiler Chickens
	4	drh. Purwaningtyas Kusumaningsih, M.Biotech.	The Performance of Chitosan Addition And Food Processing In Sodium Content Of Kawakawa (*Euthynnus affinis*) Brine Salting
	5	Dr. NurhayatI, S.TP, M.Si	Prevalency of Acrylamide Contaminant on Cimol Street Food
	6	Dr. Nurhayati, S.TP, M.Si	Nata Production As Edible Packaging Using Coconut Water And Molases
	7	Dr. Jay Jayus	Application Of Protoxidized Corn Starch Nanoparticle As Curcumin Encapsulant
	8	Dyah Triasih,S.Pt., M.Sc.	Effect Of Shelf Life Of Edamame Eggurt On Ph, Humidity, Moisture Content, And Tat

	9	Mohammad Affan Fajar Falah	Physical quality changes of dehydrated strawberry affected by different packaging in tropical environment
B4 **Moderator: Tri Ratnasari, S.Si, M.Si** **Time: 15.00 - 17.00** **Presentation: 10'** **Discussion: 5'**	1	Lailatul Isnaini, STP	Effect of Waxing And Packaging Method on The Quality of Pontianak Siam Orange
	2	Ahmad Nafi,STP., MP	Characteristics of TVP (Texturized Vegetable Protein) From Hyacinth Bean MOLEF (Modified Legume Flour)
	3	Dr. Ramaiyulis, S.Pt, M.P	Rumen Undegraded Dietary Protein And TCA Soluble Protein With Gambier Leave Residue Supplementation As A Source of Tannins In Cattle Feed Supplement
	4	Dr. Asep Nurhikmat	Effects of Canning Process on Sensory Properties Indonesia Traditional Foods
	5	Dr.Ir. I Ketut Budaraga.MSi	Study of escherichia coli and salmonella sp meatball trader in bandar creating market Padang City
	6	Ayutha Wijinindyah, S.TP, M.Gizi	Portrait Of Housewives Knowledge of *Moringa oleifera* Nutrition As A Plant Based Diet In West Kotawaringin Regency
	7	Rani Sugiarni	Optimization Formula For Addition Of Pala Fruit Flour *(Myristica fragrans*) And Elephant Ginger Flour (*Zingiber officinale*) on The Making Of Cookies Using Response Surface Method
	8	Ika Fitri	The Effect Of Lime Of Dolomite And NPK Fertilizers On The Response Of Growth, Yield And Protein Content Of Black Soybean (*Glycine soja* (L.) Merr) In Acid Soil
	TOTAL PARTICIPANTS ROOM B: 35		

Tuesday, October 6th, 2020. Symposium and Pararel Session Room C: Biotechnology and Biomolecule

Room C Link Zoom:
https://zoom.us/j/94166196620?pwd=TjVHQjQrM1dYcFo4NVRhNjdaMWVmZz09
Meeting ID: 941 6619 6620
Passcode: icals2020

Time (GMT+7)	Program	Remarks
12:45 - 13:00	**Preparation**	Committee
Invited Speaker		
13.00 – 13.10	**Opening**	**Moderator: Agung Puspito Nugroho, S.Pd., MP., Ph.D**
13:10 – 13.35	**Invited Speaker I: Dr. Ari Satia Nugraha** **Faculty of Pharmacy University of Jember** Biotechnology and Biomolecule	
13.35 - 14.00	**Invited Speaker II** **Dr. dr. Swandari Paramita, M.Kes** **Research Center for Medicine and Cosmetic from Tropical Rainforest Resources (PUI-PT OKTAL) University of Mulawarman**	
14.00 – 14.30	Discussion	

Parallel Session			
C1 **Moderator: Agung Puspito Nugroho, S.Pd., MP., Ph.D** **Time: 14.30 – 17.00** **Presentation: 10'** **Discussion:**	1	Dr. Ir. Didik Pudji Restant, MS	Production of Friable Embryonic Callus (FEC) in Adira 4 Variety of Cassava (Manihot esculenta Crantz)
	2	Nora Safira	Evaluation of the Antibacterial Against Bacillus cereus and Antioxidant Capacity of *Bryophyllum pinnatum* (Lam.) Oken Leaves
	3	Fergy Surya Ramadhan	In vitro studies on *Bacillus* sp. and Pseudomonas sp. compatibility with botanical pesticide
	4	Nur Elia Nadhira Bt Mohd Asmadi	Potency of plant resistance inducers against bacterial wilt disease on tobacco plant production caused by *Ralstonia solanacearum*
	5	Dr. Tri Marwati	Lactobacillus plantarum HL-15 Inoculum and vacuum packaging can

5'			inhibit the growth of fungus during the cold storage of fermented cocoa beans
	6	Galang Rizki Ramadhan, SP.	Characterisation of Unfolded Protein Response Gene Expression in Several Rice Varieties under Salinity Stress
	7	Dr. Desy Cahya Widianingrum, S.Pt	Characterization of Staphylococcus aureus Isolated from Subclinical Mastitis of Peranakan Ettawa Goat in Pekanbaru
	8	Nono Carsono, PhD.	Molecular and Phenotypic Evaluation for Heading Date, Panicle and F2 Selected Aromatic Rice Progenies Derived from Gene Pyramiding Effort
	9	Suseno Amien	Stevia ((*Stevia rebaudiana* Bertoni)): Biotechnological Approach for Breeding Program
C2 **Moderator: Dr. Ir. Sholeh Avivi, M.Si.** **Time: 14.30 – 17.00** **Presentation: 10'** **Discussion: 5'**	1	Ali Wafa., S.P., M.Si	Isolation Protocol of Jumbo Phage From Winter Grass Soil
	2	Wahyu Indra Duwi Fanata, SP., M.Sc., Ph.D	Regeneration Rate of Tarabas Rice Callus Induced by Several Concentration of 2,4-D
	3	Baiq Erna Listiana, SP., M.Biotech.St.	Enhancing Bioactive Sesquiterpenes Production in *Aquilaria filaria* cells culture
	4	Siti Nabilah	Efficient Callus Formation and Regeneration of Rice (*Oryza sativa* L.) in Their Epigenetic Regulation
	5	Prof. Roostita L. Balia, M.App.Sc., Ph.D.	Î²-Glucan from Yeast Cell Wall as Antifungal and Toxin Reducer towards A. flavus (AFB1) and A. ochraceus (OTA)
	6	Karyanti,M.Si	Induction of Oil Palm In Vitro Shoot Roots (*Elaeis guineensis*. Jacq) and Their Acclimatization in Mycorrhiza-Enriched Media
	7	Irza Guari Syah Fitri, S.P	The phytochemical and genetic diversity analysis of Indonesian black rice cultivars using microsatellite markers
	8	Ridlo Firmansyah, S.Pd.	Transformation of Modified High Sucrose Tomatoes by Genome Editing (Zip2::Tivi1::Sps)

	9	Dr. rer. nat. Catur Sriherwanto, BSc (Hons.), M.Si	Functional Biomolecules, Recent Potential Biotechnological Applications of The Tempeh Mould Rhizopus. A Short Review
	TOTAL PARTICIPANTS ROOM C : 18		

Tuesday, October 6th, 2020. Symposium and Pararel Session Room D: Agricultural Engineering and Technology

Room D Link Zoom: Join Zoom Meeting:
https://us02web.zoom.us/j/85946135143?pwd=Zm1BdTZhWlhVVmt6WEY3OG01VXg1QT09
Meeting ID: 859 4613 5143
Passcode: icals2020

Time (GMT+7)	Program	Remarks
12:45 - 13:00	**Preparation**	Committee
Invited Speaker		
13.00 – 13.10	**Opening**	**Moderator: M. *Rondhi*, S.P., M.P., Ph.D.**
13:10 – 13.35	**Invited Speaker I: Dr. Bayu Taruna Wijaya Putra** **Faculty of Agricultural Technology University of Jember** Agricultural Engineering and Technology	
13.35 - 14.00	**Invited Speaker II: Dr. Eng. Muhammad Ashar, S.T., M.T.** **Center for Disruptive Learning Innovation (PUIPT DLI) Universitas Negeri Malang** Agricultural Engineering and Technology	
14.00 – 14.30	Discussion	

Parallel Session			
D1 **Moderator: Roni Yulianto, S.Pt., M.P., Ph.D** **Time: 14.30 - 17.00**	1	Dian Rahmawati, S.Si.,M.Sc	The application study of technology and analysis of feasibility rice farming on rain fall land in Southeast Sulawesi
	2	Randi Anggit Wibisono, S.T.P.	The effects of Seaweed-based Coating Application on The Respiration Rate of Shallots (*Allium cepa* L) During Storage
	3	Musa Keliopas Koibur, S.TP and Dr, Ir, Nursigit Bintoro, M.Sc	The Effect of Application Times and Temperatures of Hydro-precooling on The Respiration Rate of Cayenne Pepper (*Capsicum annuum* L)
	4	Dimas Triardianto,	The effect of different time durations of ozone treatment and storage temperatures

Presentation: 10' Discussion: 5'		S.T and Dr. Ir. Nursigit Bintoro, M.Sc	on postharvest quality of Banana (*Musa acuminata*)
	5	Vinay Kumar Rathi	Impact of climate change on the spring flows affecting livelihoods in Himalayan hills of Uttrakhand region of India
	6	Muhammad Al Kahfi	Using Design Expert D-Optimal for Formula Optimization of Functional Drink that Enriched with Moringa Leaf Extract (*Moringa oleifera*)
	7	Dr. Hidrawati, S.P., M.Si	Extrinsic Motivation Underlying Traditional Agricultural Techniques for Coastal and Small Islands Communities in Southeast Sulawesi
	8	Prof.Dr. Dyah Roeswitawati, MS.	Utilization of peanut skin (*Arachis hypogea*) and bio-slurry as organic fertilizer to the growth and production of sweet corn (*Zea mays)*
	9	Dr.Ir. Dian Indratmi, MP	inhibition of orange (*Citrus reticulata blanco*) green mold with anti-fungal yeast *Aureobasidium pullulans* and *Debaryomyces hansenii*
D2 **Moderator: Tri Wahyu Saputra, S.TP., M.Sc** **14.30 - 17.00** **Time: 14.30 - 17.00** **Presentation: 10' Discussion: 5'**	1	Dr. Jamaluddin, M.P.	Development of Controlled Drip Irrigation with Lock Time System
	2	Kalananthni Pushpanathan (PhD Student)	A Database for Asian Local Perennial Herbs Leaf Images in Natural Environment
	3	Cui Hairu(student)	Efficient Farming Operation Management in Tropical Greenhouses: A Review
	4	Subhan Arif Budiman, SP., MP.	Does landslide Argopuro-Hyang Mountain recur?
	5	AriskaMia Christiwarda Sihombing, S.TP	Water Balance Assessment in Mayang Watershed
	6	Bakhroini Habriantono, S.T.P., M.P.	The Utilization of Cocoa Pod Husk Infested by Cocoa Pod Borer at Various Levels Attack into Bioethanol
	7	Subekah Nawa Kartikasari, S.P,M.P	Improved Quality of White Bread from Cassava Flour (gluten free)

	8	Slamet Fauzi	Magnetic field exposure affects plant-parasitic nematode Meloidogyne spp. Motion behavior
	9	Dwi Ajias Pramasari, M.Si	The effect of alkaline-autoclaving delignification on chemical component changes of sugarcane trash
	10	Dyah Puspita Sari	Properties and reclassification of volcanic soil in Sungai Kamuyang village, West Sumatra
D3 **Moderator: Dr. Luh Putu Suciati, S.P,M.Si** **Time: 14.30 - 17.00** **Presentation: 10'** **Discussion: 5'**	1	Mohammad Affan Fajar Falah	Physical Quality Changes of Dehydrated Strawberry Affected by Different Packaging in Tropical Environment
	2	Yogi Ardhi Cahyadi, S.P	Phytopatological compatibility of sunflower (*Helianthus annuus* l.) Var. Ipb bm 1 as refugia
	3	Dr. Dewi Sondari, M.Si	Effect of different amount crosslinker and catalyst on modified cassava towards its chemical characteristic
	4	Wachju Subchan, Drs., M.S., Ph,D.	The rate of decomposition of pineapple peel waste by earthworms (*Lumbricus rubellus*, hoff.) At different doses and water content
	5	Dr Idah Andriyani, S.TP, MT	Targeting intensive farming system in the mountainous area in central java indonesia to change and its constraints.
	6	Putri Tunjung Sari, S.P.	Effect of land criticality on nutrient availability (case study of dinoyo sub watershed, jember regency, indonesia)
	7	Sri Anita	Classification cherry coffee using k-nearest neighbor (KNN) and artificial neural network (ANN)
	8	Mohammad Affan Fajar Falah	Physical quality determination of fresh strawberry (*Fragaria* x ananassa var. Oso Grande) fruit in tropical environment using image processing approach
	9	Yaumil Zahro Fadila	Identification farming system impact on erosion yield using rusle method at kemuning watershed, Jember, East Java
	10	Bintang Candra Jatmiko, S.T.	Water supply to support agriculture system in Sampean Baru irrigated area
	TOTAL PARTICIPANTS ROOM D: 29		

SCHEDULE PLENARY SESSION OF ICALS 2020
Wednesday, October 7th, 2020.
"Retouching Strategy for Exploring Potency of Industrial Crops for Health in Adapting to the New Normal Era"

Time (GMT+7)	Program	Remarks
Plenary Session III		
08.30 – 08.45	**Preparation**	**Moderator: Ir. Jayus, Ph.D**
08.45 – 09.00	**Opening Ceremony**: Profile of ICALS, University of Jember, and Faperta	
09.00 – 09.30	**Guest speaker 3:** **Prof. Min Kyung Cho** **Dongguk University Republic of Korea** "Plant Bioactive Compounds as Health Stimulator"	
09.30 – 09.45	Discussion	
09.40 – 13.30	**Pararel Session II**	
13.30 - 14.00	Break	
Plenary Session IV		
14.00 - 14.30	**Guest Speaker 4** **Prof. Hervè Vanderschuren** **Katholieke Universiteit Leuven** "Sustainable Food and Nutritional Security during New Normal Era"	**Moderator: M. *Rondhi*, S.P., M.P., Ph.D.**
14.30 - 15.00	**Guest Speaker 5** **Prof. Dr. Heike Fruhrwirth** **Hochschule Biberach University of Applied Sciences, Germany** "Potential Usage of Microalgae for Dietary Supplement"	
15.00 – 15.30	Discussion	
15.30 – 15.40	Closing	**MC**

Wednesday, October 7th, 2020. Symposium and Pararel Session Room A: Smart Business for Agriculture and Healthy Food

Room A Link Zoom:
https://zoom.us/j/97487067909?pwd=dXFKazZEL1lMRXo2WHo2QTVodE1BUT09
Meeting ID: 974 8706 7909
Passcode: icals2020

Time	Program	Remarks
09:40 - 10:00	**Preparation**	Committee
Invited Speaker		
10.00 – 10.10	**Opening**	**Moderator: Mustapit, S.P., M.Si**
10:10 – 10.35	**Invited Speaker I: Dr. Nita Kuswardhani, S.TP., M.Eng** **Faculty of Agricultural Technology University of Jember** Smart Bussines for Agriculture and Healthy Food	
10.35 - 11.00	**Invited Speaker II: Dr. Fitria Riany Eris, SP., M.Si** **Faculty of Agricultural Technology Sultan Ageng Tirtayasa University** Smart Bussines for Agriculture and Healthy Food	
11.00 – 11.30	Discussion	

Parallel Session			
A1 **Moderator: Dr. Ir. Evita Soliha Hani, M.P** **Time: 11.45 - 13.15** **Presentation: 10'** **Discussion: 5'**	1	Handayani Indah Susanti, M.Sc.	Prospect of Tilapia Cultivation Business Development in Yogyakarta Province
	2	Himmatul Khasanah, S.Pt., M.Si	The Study of Subclinical Mastitis Prevalence in Lactating Dairy Cow in Banyuwangi Regency, Indonesia.
	3	Dr. Luh Putu Suciati, S.P,M.Si	Marketing strategy of traditional herbal drink based on consumen perspective value
	4	M. Abd. Nasir, S.E., M.Sc	Measuring the competitiveness of cassava in East Java, Indonesia: evidence in Jember regency
	5	Dr. Suci Wulandari	Designing Technology Management for Coffee Smallhoder to Promote Smart Agribusiness Implementation

	6	M. Abd. Nasir, S.E., M.Sc	Perfecting policies of chili agribusiness to support food security: evidence from Indonesia districts
A2 **Moderator: Ika Purnama Sari, S.Si.,M.Si** **Time: 11.45 - 13.15** **Presentation: 10'** **Discussion: 5'**	1	Dra. Sofia, M.Hum.	Microgreen Prospects in Supporting Agriculture and Healthy Food
	2	Laras Sirly Safitri, S.K.Pm., M.Si.	Differences in Consumer Attitude Towards Online Shopping of Fresh Products Before and During Corona Virus Disease 19 Pandemic
	3	Dr. Jam'an, S.E., M.Si.	Participation and interest in young generations of business distribution of strategic food commodities in South Sulawesi
	4	Dr. Muhammad Aswar Limi, S.Pi., M.Si	The benefits of aplication minapadi in rainfed on the level of household food security of farmers in basala district, Sout Konawe regency
	5	Samsul Alam Fyka, S.P. M.Si.	Analysis of rice-cattle integrated system model to support increased farmer income in buke district, Konawe Seratan regency
	6	Tommy Hendrix, ST., M.Si.	Canning technology in the traditional food: a portrait of SMES technology transfer towards product commercialization
A3 **Moderator: Ankardiyansyah Pandu Pradana, SP., M.Si.** **Time: 11.45 - 13.15** **Presentation: 10'** **Discussion: 5'**	1	Dr. Ir.Nur Rahmawati, M.P.	The enterpreneurship characters of water apple farmer in Wonosalam, district Demak, Regency Indonesia
	2	Fitriana Dina Rizkina, S.T.P., M.Sc.	Risk Mitigation and Structure Analysis of Logistics Cost for Marketing Pindang Fish Supply Chain in Bawean Island, Gresik, East Java
	3	Dr. Ir. Mukson, M.S	Factors Affecting Market Efficiency of Grain in Central Java
	4	Angga Adriana	Stimulation of various sounds on growth and productivity of white oyster mushroom (*Pleurotus ostreatus)*
	5	Heri Akhmadi, S.P., M.A.	Application of Standard Operating Procedures for Export-oriented Snake Fruit Farming
	6	Dr. Desy Cahya Widianingrum, S. Pt.	Robustness of dairy cattle farming industry against Covid-19 Pandemic in Joint Business Group (KUB) Tirtasari Kresna Gemilang, Malang.

A4 **Moderator: Laily Mutmainnah, S.P., M.Si** **Time: 11.45 - 13.15** **Presentation: 10'** **Discussion: 5'**	1	Abdullah Umar, SP, M.Sc	Replacing the Growth Media to Reduce the Seedling Weight of Citrus (*Citrus nobilis* var. Macrocarpa) and Its Effects on Seedling Growth
	2	Rahmat Taufiq Dwi Jatmika	Porter 5 Forces Analysis, Marketing Strategy and Market Segmentation of Product Diversification Warm Nutmeg Beverage Case Study Cisarandi Village, Warungkondang, Cianjur
	3	Riza Trihaditia	Optimization of the functional drink formulation of nutmeg made from nutmeg (*Myristica fragrans*) and ginger (*Zingiber officinale*)
	4	Subiadi	Pests density and natural enemies and the difference in soybean plants yields with natural pesticide application
	5	Ahmad Zainuddin, S.P., M.Si.	Risk Preference and Choice of Sugarcane Planting Method: Are Risk-Taker Farmers More Likely to Choose Bud Chip Methods?
	6	Dr. Ir. Joni Murti Mulyo Aji, M. Rur. M	Analysis of willingness to pay for ketakasi ground coffee in Jember regency
		TOTAL PARTICIPANTS ROOM A: 24	

Tuesday, October 7th, 2020. Symposium and Pararel Session Room B: Smart Social and Politics in Industrial Agriculture

Room B Link Zoom:
https://us02web.zoom.us/j/82651457993?pwd=VUozeWRvdGE2Tm80L3NJbkY1ZElVdz09
Meeting ID: 826 5145 7993
Passcode: icals2020

Time	Program	Remarks
09:40 – 09.45	**Preparation**	Committee
Invited Speaker		
09.45 – 09.50	**Opening**	**Moderator: Lenny Widjayanthi, S.P., M.Sc., Ph.D**
09.50 – 10.15	**Invited Speaker I: Rachmat Hidayat, S.Sos. MPA., Ph.D.** **Faculty of Social and Political Science University of Jember** Smart Social and Politics in Industrial Agriculture	
10.15 - 11.40	**Invited Speaker II: Dr. Joni Murti Mulyo Aji, M.Rur.M** **Faculty of Agriculture University of Jember** Smart Social and Politics in Industrial Agriculture	
11.00 – 11.30	Discussion	
Parallel Session		

B1 **Moderator: Shandy Pradipta, S. TP. M Biotec** **Time: 11.45-13.15** **Presentation : 10'**	1	Dr. Luh Putu Suciati, S.P,M.Si	Strategy to increase implementation of good agricultural practices (GAP) in sugarcane smallholder
	2	Sri Nofianti	The Role of Social Capital in the Success of Beef Cattle Agribusiness in Limapuluh Kota District
	3	Lenny Widjayanthi, SP. MSc. PhD	Farmer group dynamics on rice farming in using jajar legowo system in ambulu sub district
	4	Mas Ayu Ambayoen, SP., M.Si	Tengger Community Social Capital in Building Social Ecological Resilience of Communities during the Pandemic

Discussion: 5'	5	Aditya Kevin Prananda, S.St	Na-Oogst Farmers Survival Strategy during Covid-19 Pandemic in Jember Regency
B2 **Moderator: Susan Barbara Patricia. S. M., S. Hut. M. Sc** **Time: 11.45-13.15** **Presentation : 10'** **Discussion: 5'**	1	Dyah Ratna Chandra Dewi, SP.	The roles of institution in upstream sector to improve coffee quality
	2	Kurnianita Triwidyastuti, SP., M.MA	The Response of Women Farmers in Management of Sustainable Food-Reserved Garden in The Stunting Area in Yogyakarta Special Region
	3	Erwin Ismu Wisnubroto SP., MPhil.	Sustainability assessment of smallholder cassava farming in Indonesia
	4	Nugrahini Susantinah Wisnujati	Smart social political in industrial agriculture
	5	Anggita Anugra Sari	Community Perceptions of Ethnobotany: Utilization for Herbal Medicines and Traditional Ceremonies of the Tengger Community
B3 **Moderator: Ali Wafa, S.P., M.Si** **Time: 11.45-13.15** **Presentation : 10'** **Discussion: 5'**	1	Nurul Fadhilah	Design of Video-Based Extension Media Concerning the Utilization of Bekatul as Functional Food
	2	Nugroho Hasan	Design of Interactive Agricultural Extension Media in the Material of Family Medicinal Plant Utilization
	3	Asri Herdina Harianja	Analysis of Organic Village Program Implementation and Sustainability Status of Sarinah Organic Farmers Group, Ciparay, Bandung Regency
	4	Ari Wahyu diarsa, S.P.	Value Added and Development Strategy of Paste Mytilus Agroindustry on Any Scale of Business In Sidoarjo Regency
	5	Yuli Hariyati	The Factors That Influence Consumption of Chocolate Drinks in Jember Regency
		TOTAL PARTICIPANTS ROOM B: 15	

LIST OF PRESENTER

SPEAKER ABSTRACT

The Role of Industrial Crops to Improve Global Food Security in The "New Normal"

Achmad Subagio
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Abstract

Global food security is currently facing challenges, with a high world population reaching 7.8 billion and population growth reaching 1.05% per year. It is predicted to reach 8.5 billion people by 2030. Meanwhile, the Covid Pandemic -19 has also led to restrictions on movement within and across countries that can hamper logistics services, disrupt entire supply chains and affect food availability. In fact, several countries have banned the export of their foodstuffs. This condition requires good mitigation through increasing global strategic food reserves with a food procurement program on land that has not been managed optimally, and with relatively cheap investment. Industrial crops have an important role in achieving that goal, one of which is cassava. The cassava commodity was chosen to produce this strategic food reserve, because the cassava plant has a high environmental adaptability, with a large trading volume and is used in a wide spectrum of industries as food, feed and other bio-industrial materials. For this reason, a comprehensive planning is needed for the development program of cassava at the upstream-downstream level as a national and global strategic food reserve. This presentation describes the roles of industrial crops in these matters, particularly cassava, which can improve national and global food security during the "new normal".

The Potential of Industrial Crops for The Production of Nutraceutical Compounds

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Abstract

Improper nutrition can lead to various types of diseases and health problems, consequently associated with unusually high treatment costs. Currently, consumer interest in healthy diets has shifted to certain foods or food ingredients. The combination of food sources and pharmaceuticals makes an alternative in meeting the needs of healthy foods which are often referred to as nutraceuticals. Bioactive peptide is a source of nutraceutical which is a small form of protein fragments that have many positive benefits to humanity. Bioactive peptides are organic compounds formed from amino acids that are covalently bound by peptide bonds. Furthermore, some of them may exist freely in nature. Most bioactive peptides are encrypted into the parent protein structure, extracted or produced through enzyme synthesis or microbial synthesis. The selection of production methods depends upon the source from used for the extraction of bioactive peptides. Various sources for the production of bioactive peptides can be obtained from plants, animals and microbes. These plant resources are known to produce the most efficient and health beneficial bioactive peptides. Bioactive peptides can be categorized based on functional capabilities. Bioactive peptides contribute significantly to human health by affecting physiologically the cardiovascular, digestive, and immune systems. Limited natural resources result in insufficient bioactive peptide production to meet the growth needs of bioactive peptides. To tackle this mismatch, synthetic bioactive peptides are produced using biotechnological tools and processes. Synthetic bioactive peptides meet the required demand and are also much more efficient than the conventional bioactive peptides. In this context, the strategies approved to production of nutraceutical compounds from the potential of industrial crops.

Effect of Different Form and Level of Iodine on Iodine Content of Basil

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Abstract

Iodine deficiency cases in Southeast Asia amounted to 31.6% of the population of 541.3 million people, Europe is even much higher, namely 44.2% (Anderson *et al*., 2012). To reduce cases of iodine deficiency, consumption of high iodine vegetables every day will have an important role in meeting people's daily iodine needs in the future. The iodine content in vegetables can be increased by bio-fortification methods. Iodine in bio-fortified vegetables is more stable against high temperatures compared to iodine in fortified salt (Wang *et al*., 2014). Only by consuming 80 g of vegetables with iodine content of 50-100 µg I (100 g FW)$^{-1}$ can meet the daily iodine requirement. Bio-fortification technique results in the accumulation of iodine differently in plant organs according to the type of vegetables. Butter lettuce at a dose of 0.5 kg ha^{-1} KIO_3 with foliar application showed higher iodine accumulation in the edible portion than KI (Lawson *et al*., 2015). The aim of this research was to determine the effect of the most efficient application dose of KI and KIO_3 for basil plants. Level of KIO_3 and KI 0; 0.25; 0.5 and 1.0 kg ha^{-1} were applied foliar in this experiment. The results showed that KIO_3 at a level of 1 kg ha^{-1} resulted in an iodine accumulation of 5000 µg I (100 g FW)$^{-1}$ which was significantly different from all other treatments and with minimal leaves necrosis symptom levels.

Keywords: bio-fortification, basil, iodine, level

Food Science of Industrial Crops

Ariza Budi Tunjung Sari
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Abstract

Industrial crops are major contributor of food resilience of the society. The terms of industrial crops cover wide range of grain, vegetable, fruits, spices, annual and miscellaneous crops. The crops are main materials for food, beverage, pharmaceutical, cosmetic, and packaging industries. To be able to serve those industries, food science has to take place in the processing. There are at least five aspects where food science plays its role; extraction, property modification, shelf-life extension, functional food development and by-products valorization. The presentation in this seminar will discuss the science that navigates the development of industrial crop processing as well as its relevance towards the food trends in 2020.

Keywords: food science, industrial crops, market trends, modification, valorization

Smart Education for Plant-Based Diet

Farida Wahyu Ningtyias
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Abstract

A plant-based diet is a diet consisting mostly or entirely of foods derived from plants, including vegetables, grains, nuts, seeds, legumes and fruits, and with few or no animal products. A plant-based diet is not necessarily vegetarian. The plant-based diet is not just a diet, but more a lifestyle. Well-planned that well-planned plant diets support health and are appropriate throughout life, including pregnancy, lactation, childhood, adulthood, and for athletes. This study aims to identify the concepts and themes discussed by previous researchers. This study uses a systematic literature review method with a database source from Scopus indexed journals. Many studies have demonstrated that the plant-based diet is effective for weight loss. It is may also help people maintain weight loss in the long run. Following a whole-foods, plant-based diet may reduce people risk of developing heart disease, certain cancers, cognitive decline and diabetes. Plant-based diets emphasizing local ingredients are more environmentally friendly than diets that rely heavily on mass-produced animal products and produce. Some things that need to be considered when implementing a plant-based diet are fulfilling calorie needs, insufficient water consumption, consumption of iron and vitamin C sources to facilitate absorption, consumption of calcium sources, omega three fatty acids and consumption of food sources high in protein 1-2 portions at each meal. These diets can also lead to nutrient deficiencies and potential health problems if they are not well-planned.

Keywords: Plant-Based Diet, Diet, Food Consumption

Plant-based Diet For Improving Health and Well-Being of Farmers: An Agricultural Health Nursing Approach

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Abstract

Background: Food consumption must be paid more attention for fulfillment of nutrition among farmers, including the quality and quantity requirements of foodstuffs. Fulfilling the needs of plant based diet is very useful to meet the nutritional needs of farmers to support their worked actively and productively. The frequency of consumption of plant based diet will have an effect on the health status and well-being of farmers, in particularly to prevent non communicable diseases (NCDs).
Aims: Agricultural health nursing program, the study will be aimed to identify the smart education for plant based diet for improving health and well-being among farmers, especially to prevent NCDs.
Methods: An agricultural health nursing approach will be developed through stepwise steps. First, a cross-sectional study will be designed to identify the prevalence of NCDs related to their food consumption and life-style among farmers. Secondly, locally food will be identified that could be formulated for plant based diet for farmers. Thirdly, a smart education for plant based diet will be developed to maintain NCDs and to improve the health and well-being of farmers. The last, a plant based diet will be implemented as health promotion program through public health nursing intervention in public health centers.
Significance: Globally, the agricultural sector is the largest employment sector with various exposures to risk factors resulting from interactions between humans, agents and the environment. Therefore, a comprehensive management of farmer health is needed through the provision of a plant based diet to prevent NCDs. The findings of this study will be implicated for public health practitioners in the development of occupational health and safety services in the agricultural sector using the agricultural health nursing program approach by integrating smart education for plant based diets to improve the health and welfare of farmers.

Keywords: smart education; plant based diet; well-being; farmer; agricultural health nursing; public health nursing

Bioprospecting: High vs low class kingdom

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Abstract

Research in drug discovery from natural resources is challenging despite still promising. There are well known drug producing families as well understudied families. In this article, an example on bioprospecting in Indonesian medicinal plants both high class plants and low-class species are discussed. Dereplication protocol successfully revealed new constituents of Annona muricata and lichen species from Parmelia and Physcia folious Lichens. Their potency as anti-infective and anti-cancer were discussed.

Research and Development of Medicinal Plant Products from Tropical Rainforest: Post-Harvest Processing Unit of Mulawarman University

Swandari Paramita[1,2]*, Rusdiansyah[3], Nurul Puspita Palupi[3], Miftakhur Rohmah[1,3], Anton Rahmadi[1,3]
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Abstract

Tropical rainforest in East Kalimantan has a lot of potential for medicinal plants. Utilization of these medicinal plants must maintain the sustainability of tropical rainforests itself. Based on this, the cultivation of medicinal plants is important. In order to be used by the community, the medicinal plant crops need to be processed. This paper describes the development of a post-harvest processing unit at Mulawarman University that focuses on medicinal plants from tropical rainforests in East Kalimantan. This unit is a similar program, namely the PostHarvest Processing Center for Medicinal Plants or P4TO (Pusat Pengolahan Pasca Panen Tanaman Obat), which is a program of the Ministry of Health to support the use of traditional medicines in the community. The product of this post-harvest processing unit is in the form of simplicial which can be used as raw material for production by the home industry in East Kalimantan.Initally this unit focuses on the Zingiberaceae family of medicinal plants. This selection is based on a fairly high market demand for this group throughout the COVID-19 pandemic. Zingiberaceae family such as ginger, turmeric, temulawak, and bangalai are traditional medicines recommended by the government to increase the immune system against COVID-19.

Keywords: medicinal plants, post-harvest processing unit, tropical rainforest

Agricultural Engineering & Technology

Bayu Taruna Widjaja Putra
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Abstract

Problem-solving is part of the dynamics of life. We are faced with problems every day, including in agriculture. One of the keys to success in solving agricultural problems is managing responses to environmental and economic conditions. However, many farmers do not possess the necessary skills to evaluate and test improvements to optimize their farming systems systematically. Therefore we need advanced technologies such as Remote Sensing, GIS, Artificial Intelligence, Deep Learning, Internet of things (IoT), and several other advanced technologies that are believed to help solve problems in their farm production systems.

Agriculture Disruption: The future of smart farming Recommendation and Chatbot Apps

Muhammad Ashar
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PUIPT Disruptive Learning Innovation

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Abstract

The problems faced during the Covid-19 pandemic were very constrained in the agricultural sector, such as farmers who experienced difficulties in the agricultural processing process to harvest yields which resulted in some farmers in the area suffering losses. This will seriously threaten food security in the region because farmers cannot operate and produce food properly and tend to experience losses in both crop failure and sale of crops. The development of a food commodity monitoring system and a physical distancing delivery system process is a technology that connects farmers as sellers and the community as buyers by creating a plant monitoring system and harvest mapping using a farmer recommendation system and estimating food needs during the Covid-19 period based on smart farming. This combination of disruptive agriculture technology uses a smart system in the form of an IoT sensor and a recommendation application as well as a mobile chatbot. The purpose of implementing this system is to build an automatic crop monitoring system and farmer recommendations supported by a delivery system to distribute crops to the community using chatbots so as to avoid crop failure and unsold crops. In the long term, implementing a monitoring and delivery support system as well as mapping the availability of land to be able to predict agricultural yields in the future. Research results can be used as social humanities innovation and ensure food availability. The method of developing an R&D process through a ubiquitous environmental sensor system and data processing based on artificial intelligence is planned to provide innovative research results to increase the productivity of advanced agricultural products that have an impact on improving the welfare of Indonesian farmers from land to sale of final products to the community. The results of this study indicate an increase in plant productivity and the process of mapping the distribution of food sales and the suitability of market needs with the amount of food produced by farmers.

Keywords: Smart Farming, IoT sensor, Chatbot, Artificial Intelligence, and R&D

Dr. Nita Kuswardhani, S.TP., M.Eng

Smart Business For Agriculture And Healthy Food

Fitria Riany Eris
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Abstract

The Corona pandemic has changed the way humans perceive food to fulfill their daily needs. job losses, schools are closed, several business sectors have been affected, food availability is disrupted, while life continues with every effort to be able to live healthily in order to avoid Corona. This paper reviews a little about smart business for agriculture and healthy food.

Keywords: Food, healthy, business, Covid-19

Sikap, dan Kepercayaan Masyarakat Indonesia Terhadap Aplikasi Agribioteknologi.

Rachmat Hidayat

Abstrak

Fokus penelitian ini adalah untuk menyajikan analisis pengetahuan, sikap, dan kepercayaan kelompok masyarakat Indonesia terpilih tentang penerapan Agribioteknologi. Penelitian ini menggunakan desain penelitian deskriptif. Data terdiri dari 266 responden di dua daerah berbeda di Jawa Timur, Indonesia: Jember dan Bondowoso. Delapan kategori responden yang berbeda ditentukan: pelajar, ilmuwan, lembaga swadaya masyarakat, media, pembuat kebijakan, konsumen, produsen dan ulama yang secara sengaja bertingkat dan dipilih untuk membongkar pengetahuan, sikap dan kepercayaan mereka terhadap penggunaan agribioteknologi, khususnya dalam produksi pangan dan bagaimana etika budaya, norma, atau keyakinan agama memengaruhi keterlibatan mereka dengan teknologi. Temuan tersebut menyoroti berbagai perspektif tentang pengetahuan, sikap dan kepercayaan di antara delapan kelompok terhadap penerapan agribioteknologi dengan tanggapan masing-masing yang menekankan beberapa bidang konten seperti modifikasi genetik tanaman dan tanaman serta implikasi teknologi pada kehidupan sehari-hari masyarakat Indonesia.

Kata Kunci: Sikap, Kepercayaan , Agribioteknologi

Agri-food Supply Chain in the New Normal: The Impact of Covid-19 to Current Situation and Future Challenges

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Abstract

The COVID-19 outbreak has caused a devastating impact which has the potential to change socio-economic and geopolitical norms. Many countries worldwide, including Indonesia, are frantically reacting with surprising financial stimulus and recovery initiatives. In conditions full of uncertainty due to COVID-19, the agricultural sector is expected to be the safeguard for fulfilling food needs. It is imperative, therefore, to ensure food supply chains continue to function, guarantee the availability of food supplies, prevent food crises in countries already experiencing food security and nutrition challenges, and reduce the pandemic's overall negative impact on the global economy. This article reviews the current situation, challenges, opportunities, and potential solutions for building resilient food systems in the new normal. In general, initial demand and production shocks due to government restrictions on people's mobility have led to supply chain disruptions including in agri-food sector and come up with economic downturn, recession to depression. Some notable recommendations identified for building resilient food systems include re-governing market with small farmers inclusiveness, establishing green consumption initiatives, facilitating climate action, as well as bettering national logistics, distribution, and digitalization. More importantly, for brighter future, supporting government policies should enable more resilient agri-food supply chain management to emerge in fulfilling high demand of better quality and more healthy food supplies, while at the same time also facilitate more sustainable deal innovation to reduce unhealthy food consumption, unnecessary food waste and potential food losses.

Keywords: Covid-19, Agriculture, Food system, Supply chain, Sustainable, Resilience

PRESENTER ABSTRACT

The Abundance of Predator Species in Early Vegetative Phase of Rice in Banyumas Regency

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Abstract

The diversity of predator play its role in maintaining the health of ecosystem. Utilization of predators in rice fields as biocontrol of pest can prevent the use of toxic chemicals. This study aimed to determine the diversity of predators in the vegetative phase of rice plants in rice fields close to forests, and rice fields close to urban areas. The research location in Banyumas Regency was determined by purposive random sampling method. Predator species and populations were observed directly from 08.00-11.00 AM. Data were processed and calculated using Excel 2016. Based on the results of observations, there were 123 predator belong to 19 species. The most abundant main predator was *Lycosa pseudoannulata* (27.6%) and the second was *Atypena formosana* (24.26%). Based on two types of rice field conditions, the abundance of *L. pseudoannulata* was not significantly different, while *A. formosana* was significant. The higher number of *A. formosana* in the rice fields close to forest probably due to this predator is known as hills predator.

Keywords: *Lycosa pseudoannulata, Atypena formosana*, pest management, urban area.

Effect of Plating System and Biochar Applications in Different Irrigation on Physiological Characteristics of Corn (Zea mays L)

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Abstract

Corn is a food crop that has the highest production level after rice. Increasing the productivity of maize, especially on dry land, can be done with a variety of technology combinations, including setting the planting system, using organic matter and regulating irrigation systems. The purpose of this study was to determine the effect of the interaction of the planting system and application of biochar on the growth and physiological characteristics of maize. This study used a 2-factor factorial Completely Randomized Design (CRD) and each factor consisted of 2x2 treatments and 4 replications so that there were 16 experimental units. The treatments used were the T1 (Zigzag) and T2 (double row) planting system and the dosages of biochar B1 (100% biochar) and B2 (biochar (20%) and compost (80%)). The data obtained was then analyzed using Analysis of Variance (ANOVA) and if it was significantly different, it was continued with the Duncan Multiple Range Test (DMRT) difference test at the 5% confidence level. The results showed that the best treatment was T1B2, namely a zigzag planting system and a mixture of Biochar (20%) and compost (80%).

Keywords: *Zea mays* L, biochar, zig-zag, double row

The effectiveness of K-bearing minerals dissolution by Potassium-solubilizing bacteria in liquid culture

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Abstract

K-bearing minerals such as Leucite is a complex mineral containing potassium (K) needed by plants. Leucite naturally releases K elements in the soil through several mechanisms, and one is soil microorganisms activities. This research studies the effectiveness of the dissolution of potassium elements from K-bearing minerals by potassium-solubilizing bacteria (KSB) activities in liquid media. The study used liquid media of humic substances from cassava and water (H_2O) and leucite minerals from 2 deposits (Mount Ringgit Situbondo and Mount Muria Pati). Besides, *Bacillus sp* from the rhizosphere as potassium-solubilizing bacteria. Observation and analysis of changes in pH and potassium concentration were carried out regularly every two weeks until the 12th week. The results showed the dissolution of potassium from both deposits mineral in humic or non-humic liquid cultures increased with increasing the time; however, the dissolution pattern in humic liquid culture was different from the dissolution pattern in non-humic liquid culture. The highest dissolution in the humic medium for Leucite of Pati deposit occurred in the sixth week with the largest concentration of 40.30 meq.$100g^{-1}$ due to bacterial activity. In contrast, the most dissolution in non-humic media occurred at week fourth, with the largest concentration of 1.13 meq.$100g^{-1}$. The increase in pH occurred in the humic medium; conversely, in a non-humic medium, the pH decreased. Potassium-solubilizing bacteria (KSB) activity in a liquid humic medium is more excellent than non-humic liquid. KSB activity on the surface of the mineral leucite until the 12th week is still detected by using a Scanning electron microscope (SEM).

Keywords: *Leucite, Potassium solubilizing bacteria, humic substances*

Virulence of *Steinernema* spp. An Entomopathogenic Nematodes Indonesia Isolates Against larvae of White Grub *Lepidiota stigma* F (Coleoptera: Scarabaediae)

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Abstract

Lepidiota stigma (F) (Coleoptera; Scarabaeidae) is the key pest in sugarcane plantation caused devastated damaged on roots. The objectives of this research are to determine virulence of *Steinernema* sp, an entomopathogenic nematodes to larvae of *L. stigma* in laboratory. The result showed that all entomopathogenic nematodes able to kill larvae of white grub *L. stigma* at all level concentration and soil depth. The result also convinced that *Steinernema* sp. origin from Kediri was more virulence compared with the other isolates.

Keywords: *Steinernema* sp., Entomopathogenic nematodes, White Grubs, *Lepidiota stigma*, Sugarcane

Composition Of Grasshopper (*Genosula mundata*) In The Early Generative Phase Of Rice Cultivation In Two Different Conditions

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Abstract

The early phase of growth is the most vulnerable for the survival of rice plants. However, this is influenced by many factors, such as the presence of pests. This study aimed to determine the composition of pests in the generative phase of rice plants in rice fields close to forests, and rice fields close to settlement / urban areas. The research location was determined by purposive random sampling method. *G. mundata* populations were observed directly from 08.00-11.00 AM. Data on safety results were processed and calculated using Excel 2016. Based on the results of observations in the initial generative phase of rice plants, there were 17 *G. mundata*. The most abundant main location was at forests with the percentage is 11,18% and at the settlement is 4,71%. Based on the overall calculation. Based on these data, we can see that distribution of abundance *G. mundata* is higher at forestry areas. This information can be use as the basis for determining pest management in lowland rice area that is environmentally friendly and sustainable by utilizing natural materials in this new normal era which can help ease the burden of farmers expenses in providing agricultural production facilities (pesticide).

Keywords: forest, *Genosula mundata,* population, pest management.

Giberelin And Phosphorus Aplicatiion In Growth, Production And The Quality Of Okra Pods (Abelmoschus esculantus L. Moench)

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Abstract

Okra is one of vegetable most underdeveloped in Indonesia, but request increasing every year. Okra's is still volatile can't suplay needs of national okra because quality of soil fertility is decreased so that it effect to production and quality of okra. Efforts to fulfill necessiyu and quality of okra thought of gibberellins and phosphorus fertility application. Gibberellin is a hormone can assist in enlargement and engolation cell in growth and develompment plants. Phosphorus fertility is an essenstial nutrien is compenent of ATP energy in plants. The experimental design used was Randomized Block Design with 2 Factors and 3 Replication. The first Factor isconcentration of gibberelin that is Whitout giving GA_3 (G0), 50 mg/l GA_3 (G1), 100 mg/l GA_3 (G2), 150 mg/l GA_3 (G3). The second factor is application of phosphorus fertility that is 75kg/ha SP-36 (P1), 100kg/ha SP-36 (P2), 125kg/ha SP-36 (P3) dan 150kg/ha SP-36 (P4). So there is 16 combination with 3 replication. The data analyzed with Duncan multiple range test and the smallest significant difference test (α, 5%). The result of this study is 100 mg/l GA3 Gibberellin and 150kg/ha SP-36 treatmen can increase internode of plants tune of 33, 150kg/ha SP-36 treatment increase height of plant tune of 142,58 cm. The 100 mg/l GA3 Gibberellin and 150kg/ha SP-36 increased the leaf area by 2,03 cm. 100 mg/l GA3 Gibberellin and 150kg/ha SP-36 treatmen can increased to pods weight was 154,8 grams and pod production was 6,45 tons. 150kg/ha SP-36 treatment increased to the proteint content of the pods is 2,13%.

Keywords: Okra, Pod Production, Protein.

Chitosan From Crab Shell As Natural Coating Materials And Protecting Agent On Red Chili Against Anthracnose

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Abstract

Chitosan is a polysaccharide derived from shell of *Crustaceae* that may has function as a natural coating on horticultural products, such as red chili which is susceptible to anthracnose disease. This study was aimed to obtain and study on the characteristics of chitosan from crab shell waste and get an effective chitosan concentration for controlling anthracnose on red chili. Chitosan obtained through three processes, including demineralization, deproteination, and deacetylation. The result showed the characterization of chitosan obtained include: the yield is 32.29%, biuret test is purple, solubility in acetic acid is partially dissolved, ash content is 0,02%, melting point is 193,2°C, water content is 6.87%, particle shape is crystal, and viscosity is 192.9 centipoise. Pathogen *Colletotrichum* sp. was isolated from infected red chilies. The result of in vitro assay showed that chitosan from crab shell at a concentration of 2 mg/ml was able to inhibit the growth and development of *Colletotrichum* sp., whereas in vivo assay, chitosan pro-analysis at concentration 2 mg/ml and chitosan from crab shell at 6 mg/ml were able to delay the incubation period to 3.67 days and reduce disease severity of 33.33% but did not affect fruit shrinkage compared with the control treatment.

Keywords: Anthracnose, Chitosan, Crab Shell Waste, Red Chili Pepper

Uji Adaptasi Pertumbuhan Dan Produksi 4 (Empat) Varietas Kacang Hijau (*Vigna Radiata* L) Pada Lahan Pesisir

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Abstract

Komoditas Kacang hijau (*Vigna radiate* L) biasanya menempati posisi tanam terakhir dalam pola tanam setahun, sehingga keberadaan varietas dengan umur genjah, masak serempak dan hasil tinggi menjadi sangat penting terutama pada daerah dengan berbagai keterbatasan iklim dan tanah pada lahan pesisir. Penelitian ini bertujuan untuk mendapatkan varietas tanaman kacaang hijau mampu tumbuh baik dan berproduksi tinggi di lahan pesisir. Penelitian ini disusun menggunakan Rancangan Acak Kelompok (RAK) dengan faktor tunggal yang terdiri dari empat varietas kacang hijau yaitu Vima1, Vima2, Vima3 dan Kutilang. Tahap penelitian diawali dengan persiapan tanam (pengolahan lahan dan petak percobaan), bahan tanaman (seleksi benih), penanaman (jarak tanaam dan jumlah benih perlubang), pemeliharaan (pemberian air, penyulaman, penyiangan, pemupukan dan pengendalian HPT), panen dan pengamatan pertumbuhan dan hasil. Data hasil penelitian dianalisis dengan uji F dan dilanjutkan dengan uji Dun'can. Hasil analisis stattistik diperoleh hasil bahwa keempat varietas kacang hijau yang diuji adaptasikan yaitu Vima 1, 2, 3 dan Kutilang mampu beradaptasi dan toleransi pada kondisi tanah dan iklim di Kalimantan Utara dengan lahan pesisir umumnya mempunyai sifat tanah yang tidak stabil. Varietas Vima 3 menghasilkan produktivitas tertinggi sebesar 148,44 kg/ha diikuti Vima 1 dan 2 yaitu 139,20 kg/ha dan 131,12 kg/ha. Varietas Kutilang meskipun mampu beradaptasi dan tumbuh baik namun menghasilkan produktivitas lebih rendah dan berbeda dengan hanya 117,35 kg.ha.

Katakunci: Adaptasi, agroklimat, produktifitas

Genetic Variability Parameters of Maize (*Zea mays* L.) Mutant Irradiated Gamma Ray

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Abstract

Thirty inbred lines of maize mutants (M_1) were evaluated in a randomized complete block design experiment with three replications. Data were collected on days to anthesis and silking, anthesis-silking interval (ASI), plant height, leaves number, days to maturity, ear number, grain yield, grains number, weight of 100-grain. Mean values were used to determine characters' phenotypic and genotypic variances, phenotypic, genotypic and environmental coefficients of variation. Moderate heritability estimates were observed for most traits. Otherwise based on genotypic coefficient of variance, for most traits had low genetic variability but generally high genetic variability was observed for most traits based on standard deviation of genotypic variance. Grain yield as important trait had moderate genetic variability based on heritability estimates, high based on genotypic coefficient of variance and standard deviation of genotypic variance. Therefore it provides better opportunities for selecting plant material regarding these traits.

Keywords: heritability estimates; standard deviation of genotypic variance; genotypic coefficient of variance

Selection Of Endophytic Bacteria From Rice Plants To Control Bacterial Leaf Blight By *Xanthomonas oryzae* Pv.Oryzae

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Endophytic bacteria are bacteria that are in plant tissue without causing damage to plants. These bacteria can act as biocontrol agents to induce plant resistance to pathogens and spur plant growth. The purpose of this study was to obtain endophytic bacterial isolates capable of generating resistance to rice against Xanthomonas oryzae pv. oryzae (Xoo) causes bacterial leaf blight (HDB) and increases rice growth. The study consisted of 3 stages: 1) Exploring endophytic bacteria in the endemic area of Xoo. A sampling of healthy rice plants among the diseased plants carried out using a purposive random sampling method. Endophytic bacteria were isolated from the roots, stems, and leaves of healthy rice then characterized based on morphology, physiology, and safety selection as biological agents. 2) Selection of endophytic bacterial isolates to induce resistance to rice plants. Endophytic bacteria introduced two times, namely the seeds and seedlings to be transplanted. The seedlings were then inoculated with Xoo bacteria at 20 days after a day using the leaf clipping method. 3). Characterization of endophyte bacteria as biological agents. The study used a Completely Randomized Design insisting of 24 treatments (22 endophytic bacterial isolates + positive control + negative control) and three replications. The results on the first step, Twenty-two isolates obtained were viable as biological agent candidates. The results showed the isolates code LmB1, LmA6, and LmB2 induced resistance of rice plants with disease suppression indexes of 35.82%, 23.78%, and 23.78%, respectively. The isolate code LmA6, LmB1, and LmB35 increase rice plant growth with the effectiveness of 69.56%, 56.51%, and 47.82%, respectively. Two isolates, namely LmB1 and LmA6, can induce plants and increase rice plant growth. All isolates were able to inhibit the growth of Xoo, produced HCN, siderophore, protease, and catalase enzymes as bacterial characters as biological agents.

Keywords: biological control, endophytic bacteria, induce resistance, Xanthomonas oryzae pv.oryzae

Study on Production of Several Soybean Varieties with Corn Intercropping System on Dry Land in East Lampung, Lampung Province

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Abstract

Soybeans still become a commodity of controversy nowadays. Farmers are often reluctant to plant because the selling price tends to be low. On the other hand, the need for raw soybeans for small-scale industries tends to increase. This condition occurs in line with the increasing demand for processed food products made from soybean (tofu, tempeh, soy sauce, soy milk, etc.). Accordingly, soybeans remain a strategic commodity to be developed to balance consumer needs. At the farm level, soybeans is less desirable for farmers to be planted. Innovations are needed to provide solutions in order to maintain soybean production, especially in dry land. It is indispensable to study the technology innovation of the intercropping system (*turiman*) by planting soybeans with other commodities on dry land. The purpose of this study was to assess the level of production of several soybean varieties grown using the intercropping system (*turiman*) with corn on suboptimal dry land. The study was conducted in East Lampung during the 2nd planting season from December 2019 to March 2020. The soybean varieties planted are Dena, Devon, Anjasmoro, and the local one (Tanggamus). The varieties of corn planted are the local existing one. The intercropping system used a corn-soybean pattern of 2 rows of ginger and 7 rows of soybeans (*Jale 2-7*). The corn planted with zigzag pattern. The land area used for intercropping crops is 1 ha. The results showed that the intercropping system between soybeans and corn provided optimal soybean production. The average soybean production was 1,506 kg/ha. The highest soybean production was the Devon variety (1,768 kg/ha). Meanwhile, the Anajasmoro variety yielded 1,470 kg/ha, Dena variety (1,443 kg/ha), and the local Tanggamus variety (1,342 kg/ha). Corn production was 1,300 – 1,720 kg/ha of wet shelled corn. The corn-soybean (*Jale* 2-7) intercropping system was able to optimize the use of dry land based on rainwater irrigation. This innovation contributed to the improvement of the cropping index from CI = 100 to 150-200.

Keywords: intercropping, soybean, corn, rainfed, dry land

Effect of Liquid Seaweed Extracts as Biostimulant on Vegetative Growth of Soybean (*Glycine max* L.)

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Abstract

Seaweeds are an important sustainable marine source and extracts from them have been applied as plant biostimulants. Seaweed-based extracts have been recently employed as sustainable tools to improve abiotic stress tolerance and increase growth and quality of plant. The research aimed to evaluate the effect of liquid seaweed extracts from some species of seaweeds with different concentrations on vegetative growth of soybean. Samples of seaweed were collected on Kasiak Gadang Island, Nirwana Beach, Padang, West Sumatra. Species of seaweed we tested were *Padina minor, Sargassum crassifolium, Sargassum cristaefolium* and *Turbinaria decurrens* and concentration of liquid extracts were control, 0.1%, 0.2%, 0.3%, and 0.4%. The result showed that *P. minor* liquid extract increasing some parameters including height, number of leaves, number of branches and fresh weight. While the dry weight of soybean was similar among the treatments in soybean. 0.4% concentration of seaweed extract significantly improves all parameters of vegetative growth of soybean.

Keywords: Biostimulant, Seaweed, Soybean, Concentration, Ultisol

The Role of Endophytic Bacteria and Mycorrhizae Fungus as Plant Growth Inducer of White Tumeric

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Abstract

The use of endophytic bacteria and mycorrhizae fungus as plant growth inducer has been known. Endophytic bacteria could promote the growth of their host plant and *Mycorrhizae* could promote the growth of almost all species of plants. This study was aimed to investigate the effect of endophytic bacteria (KPU2, KPU4, KPR4.2, KPR8, KPR9, KPD5), mycorrhizae fungus, and consortium both of potential microbes on the growth of white turmeric. The experiment was set up at lath house for 10 months. The results of this study showed that single inoculation was better than that multi strains inoculation. Single endophytic bacteria inoculation and mycorrhizae inoculation produced the higher tuber dry weight of white turmeric (1059,33 gr and 918 gr, respectively). Endophytic bacteria were the most efficient inoculant compared to the other inoculant or treatment and significantly increased the number of leaf and sapling (14,33 and 2,83, respectively). The maximum plant height was observed in mycorrhizae inoculation (109,75 cm). Based on the microscopic observation of root infection, endophytic bacteria and mycorrhizae fungus could infected the root of white turmeric with the percentage of root infection is 25,55%. The results suggested that single endophytic bacteria and single mycorrhizae inoculation can be employed for plant growth inducer of white turmeric.

Effect Of Auxine And Cytokinin Combination And Tuber Size On Shallot Growth And Production

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Abstract

The aims of this study is to determine the effect of growth regulator at various doses and tuber sizes on the growth and yield of shallots. The research was conducted at the screen house of Karangploso Experimental Instalation, AIAT of East Java, Malang. The experimental design used a factorial randomized block design with 2 factors and 3 replications. Factor I consisted of 5 treatment combinations of Auxin and Cytokinin i.e (1) 0 ppm Auxin + 0 ppm Cytokinin, (2) 50 ppm Auxin + 50 ppm Cytokinin, (3) 50 ppm Auxin + 100 ppm Cytokinin, (4) 100 ppm Auxin + 50 ppm Cytokinin, and (5) 100 ppm Auxin + 100 ppm Cytokinin. Factor II consisted of 3 tuber size treatments, i.e : (1) small tubers (<15 g), (2) medium tubers (15-20 g), and large tubers (> 20 g). The results showed that the use of tubers soaked with growth regulator (Auxin and Cytokinin) affected growth and yield of shallot bulbs. Soaking using growth regulator as much as 50 ppm Auxin + 50 ppm Cytokinin in large tubers can increase tuber weight by 39.60 g of tubers per clump.

Keywords: Auxins, Cytokinin, tuber size, growth, yield, shallot

Quantitative Responses, Heritability, And Correlation Of Soybean Genotypes Under Drought Stress

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Abstract

The aim of this study was to know the responses, heritability, and correlation of quantitative traits of soybean genotypes under drought stress. The study was conducted using experimental method with plastic pots as experimental units which were laid out based on Completely Randomized Design (CRD) with three replicates. The study was carried out in green house of Faculty of Agriculture University of Mataram. Two factors were used in this study: Soybean Varieties (V): Lawit, Sibayak, Kaba, Pangrango, Seulawah, Nanti, and Burangrang; Drought factors (D): no drought stress, drought stress at vegetative phase, drought stress at generative stress, and full drought stress from vegetative to generative stresses. The observed quantitative traits focussed on the generative traits: flowering date, harvesting date, number of pods, number of emptied pods, number of filled pod, seed number per pod, 100 seeds weight, and seed weight per plant. Results of the study showed that: 1). Quantitative responses of soybean varieties under drought stress varied depending on the variety and growth phase of soybean during drought stress. 2). Heritability of quantitative traits under drought stress were relatively high except for the number of emptied pods. 3). Under drought stress, yield (seed weight per plant) was strongly correlated with number of pods, number of filled pods, and number of seeds per plant.

Keywords: soybean, drought, stress, response, heritability, correlation, quantitative traits

The Growth Responses of Hitam Melik Black Rice, The Local Variety of Banyuwangi by Manures Application

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Abstract

Black rice as a natural wealth with economic value is very important to be developed, regarding to the high anthocyanin and antioxidant nutrients contained in it. Black rice development is still constrained by the cultivation periode and low production, so black rice is rarely cultivated. A way to improve the quality and quantity of black rice is by applying fertilizers, both organic and inorganic. This study aimed to identify the type and level of manures against the vegetative stage of black rice. In addition, lack of the guidelines of black rice fertilization also supports this study for further study. The experiment was carried out in a screen house used Completely Randomized Design (CRD) with 3 types of manure, which are chicken manure, cow manure, and goat manure. The levels of manure used were 0%, 20%, 40%, 60%, 80%, 100% with 3 replications. The ANOVA test showed that the vegetative responses of black rice was not significantly different due to the manure application. However, there was a tendency between chicken manure and goat manure to increase the vegetative responses of black rice, while the cow manure tended to decrease the vegetative response of black rice plants..

Keywords: black rice, vegetative, organic matter.

Concentration Of Npk Liquid Foliar Macro Nutrient And The Dosage Of Phonska Npk Fertilizer To Improve The Quality Of Red Chilies (*Capsicum annum* L.)

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Abstract

The research objective was to known the concentration of NPK liquid foliar macro nutrient and the dosage of Phonska NPK fertilizer to improve the quality and yield of red chilies and profit increase. The study was conducted in Batu City (923 m asl) from December 2018 to June 2019. The study used a randomized block design with 4 (four) replications consist of 7 (seven) treatments and 1 (one) control, namely: F0 (without fertilizer), F1 recommended fertilizer (900 kg.ha^{-1} NPK Phonska), F2 (225 kg.ha^{-1} NPK Phonska + 0.5 ml.l^{-1} NPK liquid macro nutrient foliar fertilizer), F3 (450 kg.ha^{-1} NPK Phonska + 1.0 ml.l^{-1} liquid macro nutrient foliar fertilizer NPK), F4 (675 kg.ha^{-1} NPK Phonska + 1.5 ml.l^{-1} NPK liquid macro nutrient foliar fertilizer), F5 (900 kg.ha^{-1} NPK Phonska), G (1,125 kg.ha^{-1} NPK Phonska + 2.5 ml.l^{-1} NPK liquid macro nutrient foliar fertilizer), and F6 (1,350 kg.ha^{-1} NPK Phonska + 3 ml.l^{-1} NPK liquid macro nutrient foliar fertilizer. Data analyzed with ANOVA and DMRT 5%. The results showed that the treatment had a significant effect on plant height, number of leaves, number of branches, thickness of fruit pulp, and yields. The most economical treatment of Relative Agronomic Effectiveness or RAE was more than 100% at F4 (675 kg.ha^{-1} NPK 15-15-15 + 2 ml.l $^{-1}$ of NPK liquid macro nutrient leaf fertilizer) was 102.27% and F treatment (900 kg.ha^{-1} NPK 15-15-15 + 2 ml.l^{-1} of NPK liquid macro nutrient leaf fertilizer) reached 117.90%. The results of the financial analysis show that F5 is the most profitable. Treatment F (900 kg ha^{-1} NPK 15-15-15 + 2 ml.l^{-1} NPK liquid macro nutrient foliar fertilizer) produced the highest R / C of 3.74.

Keywords: foliar fertilizer, fuit quality, phonska, red chilies, yields

Selection of Arabica Coffee Varieties Against Resistance to Leaf Rust Disease based on Flavonoid Content

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Abstract

Plant selection is the beginning of a plant breeding activity. Selection on estate products is usually chosen based on several criteria, such as production, product quality, and stress resistance from biotic and abiotic factors. Leaf rust caused by Hemileia vastatrix is a disease that can reduce coffee production by 25%. Conventional plant breeding activities require a long time. Initial plant selection based on the content of certain metabolites can be a solution to predict how the nature of plant phenotypes is based on statistical models. The purpose of this study is to obtain a nationwide source of Arabica coffee germplasm resistant to leaf rust attack based on leaf flavonoid content. The study used a completely randomized design (CRD) with 5 replications. The data obtained were analyzed using the ANOVA test and Duncan's advanced test with maragogic varieties as a control. The result was the Sigararutang genotype has resistance to leaf rust disease (Hemileia vastatrix) with flavonoid content of 2,11mg.g-1 on leaves.

Keywords: coffee leaf rust; secondary metabolites; plant breeding; disease resistance

Effects of relay-planting several peanut rows on yield of two maize varieties at different row spacing

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Abstract

This study aimed to examine the effects of relay-planting several rows of peanut between rows of maize at different spacing on yield components of two maize varieties, by conducting an SSP-designed experiment testing three treatment factors, namely additive intercropping (I) maize with peanut as the main plots (I0= without intercropping; I1, I2, I3 = additive intercropping with 1, 2, 3 rows of peanuts); maize varieties (V) as subplots (V1= local waxy maize, V2= Bisi-816 hybrid maize); and maize row spacing (S) as sub-sub-plots (60, 75, 90 cm). The results indicated that variety differences had the most significant effects on the observation variables, followed by row spacing, and intercropping, but there were three-way and two-way interaction effects on green leaf number 63 days, showing that the highest number was on hybrid maize plants of 75 cm row spacing intercropped with three rows of peanut. On dry stover weight and grain yield per plant, there was no significant effect of row spacing in each variety, but per m2, the highest average was on waxy maize for dry stover and hybrid maize for grain yield, both under the lowest spacing, indicating the possibilities to reduce row spacing under additive intercropping with peanut.

Keywords: maize, peanut, intercropping, row spacing, relay-planting

Adaptation Test Of Various Dry-Land Composite Corn Varieties In Sigi Regency, Sulawesi Tengah

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Abstract

The research aimed to kill several composite maize varieties on dry land. The research was conducted in Bulili Village, Nokilalaki District, Sigi Regency, Central Sulawesi Province with an area of 6 hectares. The research was conducted from March to June 2019. The research design used was a randomized block design with non factorial groups, consisting of four composite corn varieties as treatment. with six replications (the number of farmers as replications). The variability adaptation test is complemented by an analysis of economic feasibility and farmers' perceptions of corn compost. Data analysis used variance and Duncan's Multiple Range Test (DMRT) at the 5% level. Economic feasibility is measured by the RC ratio while farmer perceptions are measured by the scoring method. The materials used are composite corn seeds (Lamuru, Sukmaraga, Srikandi Kuning and Anoman), fertilizers and pesticides. Observation parameters include components of growth and yield. The results showed that the Lamuru variety gave significantly different growth and yields to all varieties. The suitable and superior varieties in the research location were Lamuru and Sukmaraga (8t / ha) and the lowest was Anoman (7 t / ha). All are economic analysis feasible all variety with each RC ratio above 1

Keywords: composite corn, dry land, adaptation test, high yield varieties

Lettuce (*Lactuca Sativa* L.) Growth And Soil Characteristics As Affected By Biochar And Inorganic Fertilizer

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Abstract

Biochar has long been known as an important material for soil amendment. A field experiment was conducted to characterized the properties of biochar; to evaluate the characteristics of soil chemical changes; and also to investigate the effect of lettuce growth. The study employing a Randomized Complate Block Design (RCBD) in the pattern of factorial, which consisted of two factors. The first factor was two types of biochar, namely: rice husks biochar (B1), sawdust biochar (B2), and the second factor was inorganic fertilizer (F) at four different rates of 0, 100, 200 and 300 kg inorganic fertilizer ha^{-1}, respectively, with three replications. Data collected were analyzed statistically by using analysis of variance at 5% level and significant treatments effect were separated with honestly significant difference at $P \leq 0.05$. The results showed that there were no interaction between biochar types as soil amendment and inorganic fertilizer rates on soil chemical and lettuce growth. Dealing with the soil chemical properties, the characteristics of rice husks and sawdust biochar affected the soil pH, organic carbon, nitrogen (N) total, phosphorous (P) availability, and exchangeable potasium (K). Meanwhile, inorganic fertilizers (F) application increased all the soil chemical properties were tested. In addition, lettuce growth indicated that application of inorganic fertilizers significantly increased the shoot fresh and dry weights by increasing the plant height, the numbers of leaf and leaf area of lettuce.

Keywords: biochar; inorganic fertilizer; soil amendment;lettuce growth

Performance of TSS Growth and Production in East Java

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Abstract

True Shallot of Seed (TSS) of shallot is shallot seed origin as solution of seed availability problem. Generally, farmers still use bulb seed for shallot production. This is because the aspect of shallot cultivation using TSS seed is still to be reviewed. The research objective was to known performance of growth and production of TSS in East Java. The Research was carried out in 2017 until 2018 at Probolinggo District and Batu city, using 2 (two) varieties, namely Trisula and Biru Lancor. This study used a randomized block design (RBD) and was repeated 5 times. The results showed that the growth phase of the Biru Lancor variety showed a better value than Trisula in each location with plant height (64.4 cm), number of leaves (78.2), number of tillers (14.5) and number of flowers. / umbel (4,8). The generative phase showed that Trisula variety produced higher TSS yields but lower yields for bulb seed, whereas for Biru Lancor varieties the TSS yield was lower than bulb seed yields. Biru Lancor variety is also more resistant to environmental conditions but more susceptible to pest attack and the Trisula variety shows the opposite.

Keywords: Biru Lancor, Trisula, TSS

Biological Control of White Grubs (*Lepidiota stigma* L;Coleoptera:Scarabaeidae) With Entomophatogenic Nematodes and Fungus *Metharizium anisopliae* (Metsch)

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Abstract

Biological Control Agents (BCA) Entomopathogenic nematodes (EPn) *Heterorhabditis* spp. and fungi *Metarhizium anisopliae* have been known to control the major pests of sugarcane and cassava, namely the white grub larva *Lepidiota stigma*. We expected that mixing BCA with organic fertilizer would provide optimal conditions for controlling *L. stigma*. This study was conducted to test the effectiveness of BCA agents for controlling three species of pests: *L. stigma*, *Galleria melonella*, and *Tenebrio molitor*. The study of completely randomized block design (CRD) approach using six BCA concentrations of Iinfective Juvenile (IJ) EPn including 10^0 (control), 10^3,104,10^5,10^6,and 10^7 ml/1000 ml. The treatment was repeated three times. We tracked larval mortality for 24, 48, and 72 hours after the initial inoculation. Similarly, organic fertilizer mixed with the fungus *M. anisopliae* (in a 25-L pot) was tested on the larvae. The results showed that EPn effectively killed 100% of *L.stigma* larvae, where as *M. anisopliae* was only 10% effective. When organic fertilizer was mixed with both BCA types (nematode and fungi), the mortality of the three larvae species reached 100% at a nematode concentration of 10 IJ/1000 ml. In contrast, *M. anisopliae* only caused 70% mortality at a concentration of 10^7 spores/L after 72 hours of inoculation. It was difficult to collect white grub larvae of *L. stigma* from the field. From May to June, the larvae were present in the ground at a depth of more than one meter in the soil, therefore, it was hard to dig them out.

Keywords: Control, Larvae, Phatogenecity, Metharizium, and Nematodes.

Effect Of Organic Fertilizer "Cakra Tani Wkg" On The Growth And Results Of Sweet Corn (*Zea mays saccharata*)

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Abstract

The corn commodity is a promising commodity economically for the production process. Apart from not requiring a long harvest time, sweet corn has a high enough selling value, without a long post-harvest process. The location of the research was conducted in rice fields in Tawangargo Village, Karangploso District, Malang Regency. Altitude ± 700 m above sea level. The implementation was carried out from December 2019 to July 2020. The research design was carried out using a Complete Randomized Block Design, 2 factors. Factor 1, the recommended fertilizer dosage of 3 doses (0, ½ and 1 dose), the second factor is the dose of "Cakra Tani WKG" fertilizer (0, 4, 8, and 12 g / l) with 4 repetitions, with intervals of 7-10 once a day. Giving 4 ml / 1 dose of inorganic fertilizer "Cakra Tani WKG" at intervals of 1 week, together with 1 recommended dose of NPK affects the growth and yield of sweet corn plants. The highest production per ha in this treatment was 13,339 kg. The highest RAE value is 325,6% in the recommended 1 dose of NPK treatment plus 4 g / 1 of "Cakra Tani WKG". The economic approach is by calculating the R / C ratio, the treatment with the highest RAE is the R / C ratio of 8,59 with a net income of IDR 176.785.041,-

Response Of Sweet Potato Yield Components To Stakes Angle And Mulch Type: Sweet Potato Cultivation In The Papua Highlands

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Abstract

This study aims to improve the ability of sweet potato plants to obtain photosynthetic active radiation through a combination of stake angle with mulch as a reflector. The experiments were arranged in a separate plot design with three replications. The main plot consisted of Cangkuang variety with 90° stakes and Cangkuang varieties with 60° stakes. The plots consisted of no mulch, straw mulch, white sand mulch, clear plastic mulch, and black silver plastic mulch. The results showed that the use of mulch as a reflector on both stakes angle was able to increase photosynthesis active radiation by 27.84% to 34.63% compared to without mulch at 16.82%, and the maximum leaf area index at the age of 100 dap was 3.74 to 4.45 at stakes of 90° and 3.23 to 4.10 at stakes angle of 60°. The number of tubers per plant increased and reached the highest of 3.17 and 4.50 in straw mulch, the number of marketable tubers from 51.90% to 59.23% compared to without mulch of 41.97% for stakes angle of 90° and 44.67% to 65.83% compared to without mulch of 32.47% for stakes angle of 60°.

Keywords: photosynthetic active radiation, sweet potato, stakes angle, mulch as a reflector

Effect of additive intercropping with peanut and organic-silicate-biofertilizer combinations on growth and yield of shallots

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Abstract

This study aimed to examine the effects of additively intercropping shallot with peanut and application of organic-silicate-mycorrhiza-bio-fertilizer combinations on growth and yield of several varieties of shallots, by conducting a field experiment designed with Split-Split Plot design, with three blocks and three treatment factors, namely additive intercropping as the main plots (T0= without; T1= with shallot-peanut intercropping), shallot varieties as the subplots (V1= Bima Brebes; V2= Ketamonca; V3= Super Philip), and fertilizer combinations as the sub-subplots (P1= NPKS fertilizer only; P2= NPKS+organic+silicate; P3= P2+mycorrhiza bio-fertilizer). Results indicated that fertilizer combination showed the most significant effects compared with the other treatment factors, and both fertilizer combinations containing silicate and organic fertilizer (P2 and P3) significantly increased yield of shallot, especially under P3 fertilizer, which contained mycorrhiza bio-fertilizer. Although intercropping with peanut showed no significant effects on all observation variables, there was a significant three-way interaction effect on shallot yield indicating different responses between varieties to the treatment factors, in which yield of Ketamonca (V2) was not affected by intercropping but yield of Bima Brebes (V1) was reduced by intercropping, whereas yield of Super Philip (V3) was increased by intercropping it with peanut, especially under fertilizer combination containing mycorrhiza bio-fertilizer (P3).

Keywords: shallot, peanut, intercropping, silicate, mycorrhiza

Increasing Productivity and Intensity of Planting with Intercropping of Soybean Corn and Mung Beans in Rainfed Rice Fields

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Abstract

Increasing the productivity of wet rice fields can be done through productivity per unit area and increased cropping. The low productivity and cropping intensity in rainfed lowland is due to the fact that air sources only depend on rainfall. Efforts that can be done are by arranging cropping patterns such as cropping patterns for soybeans and mung beans. The purpose of this study was to increase land productivity and cropping index in rainfed lowland with an intercropping cropping pattern of soybean maize and mung bean. The results showed that the intercropping system between Bima maize varieties and Grobogan soybean varieties was more profitable than monoculture cultivation, Bima maize varieties produced 1.1 t ha-1 and Grobogan soybean varieties 3.7 t ha-1. The intercropping planting has the highest Land Equality Value (NKL), which is 3.37.

Keywords: cropping intensity, intercropping, productivity, corn, soybeans, mung beans

Soil Fertility Improvement Of Ex-Mining Of Bauxite For Growth And Production Of Corn In West Kalimantan

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Abstract

Efforts to reclaim the ex-mining land that can function properly in supporting plant growth can be started by improving the contour, slope, or quality of the holes in the former mining land (landscaping) and returning soil fertility.Bauxite mined soils are usually dense and difficult to process have structure, texture, porosity, and bulk density that do not support the development of the root system and interfere with plant growth. This is due to an increase in heavy metals and a decrease in soil pH. Efforts made include administering manure that can affect soil structure improvement, increasing soil pH, organic C and P in the soil. The purpose of this study is to improve the fertility of bauxite mined soils by providing manure for corn growth and productivity. The design used was a factorial randomized design, with treatment 1) Cow manure (A): A0 (none), A1 (2 t ha^{-1}), A2(5 t ha^{-1}) and chicken manure (B): B0 (none), B1 (2 t ha^{-1}), B2 (5 t ha^{-1}). The results showed that organic matter manure chicken and cow manure can improve soil fertility in the former bauxite mine so that it can increase soil pH, C-organic and P in the soil and increase corn production. Giving cow manure or chicken manure as much as 5 t ha^{-1} markedly increases in corn productivity by 4.5 t ha^{-1}.

Keywords: ex-mining land, soil fertility, productivity, maize crop

The Effective Of Arbuscular Mycorrhiza On Growth Of Petai Plant (Parkia speciosa) In Metal Tainted Soil Pb

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Abstract

This research aimed to know the effect of vesicular arbuscular mycorrhiza application on the growth starfruit plants in accumulation of Pb and to know the optimal dosage of vesicular arbuscular mycorrhiza application on the growth starfruit plants in accumulation of Pb .The research method applied here is experimental in at Kasa House, Soil Biology Laboratory and Central Laboratory of the Faculty of Agriculture, University of Sumatra Utara. This research used a completely randomized design factorial with one factors. The first factor was the inoculation of mycorrhiza with 4 levels doses (0 g/seeds, 10 g/seeds, 20 g/seeds, 30 g/seedling) The results showed vesicular arbuscular mycorrhiza had a significant effect on plant height,total leave, leaf index, root canopy, absorption efficiency of Pb of plants. So, A 20 g mycorrhizal was the optimal dose against on the growth starfruit plants in accumulation of Pb.

Keywords : *Mikoriza arbuskula*, Plants, Heavy Metal Pb

Population Dynamics Of Diaphorina Citri With The Implementation Of Integrated Management Of Healthy Orange Gardens (Ptkjs) And Cvpd Detection With Pcr Engineering

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Abstract

This study was to determine the population dynamics of Diaphorina citri with the Application of Integrated Management of Healthy Citrus Gardens (PTKJS) and detection of CVPD by PCR technique. This research was conducted in a village in Tebing Batu village, Sebawi District, Sambas Regency from February to October 2018. The research used observation / monitoring techniques for insect vectors, the abundance and diversity of insects and disease symptoms using the PCR technique. The results showed that the application of monitoring techniques which was continued by PTKJS, there was an increase in crop yields and an increase in the diversity of the highest insect species trapped after the implementation of PTKJS was dominated by the Hymenoptera Order with 17 families out of a total of 7515 trapped insects. The application of monitoring techniques has resulted in an average emphasis of Diaphorina citri from 16,33 to 1,67. The PCR method is a very sensitive method and can be used to detect pathogenic bacteria that cause CVPD based on testing of 27 samples repeated 3 times showing> 90% positive indicating the presence of L. asiaticum bacterial infection that causes CVPD.

Keywords: Population Dynamics, Diaphorina citri, CVPD, PCR

Sweet Corn Yield and Growth under Different Incubation Time for Tithonia Enriched Liquid Organic Fertilizer

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Abstract

A serious problem in agricultural practice is dependence of farmers on synthetic fertilizers, which are expensive and not environmentally friendly when used excessively. An alternative to solve environmental damage, especially the declining soil fertility, is to use organic fertilizers. Tithonia weed (*Tithonia diversifolia*) is commonly used as a source of Liquid Organic Fertilizer (LOF). Tithonia is a broad-leaf weed, grows fast, and contains high N. However, the quality of LOF is highly dependent on the incubation time. This study aimed to examine the influence of LOF incubation time on sweet corn plant growth and yield. This experiment was conducted at the Experiment Station, Faculty of Agriculture, University of Bengkulu, from August to December 2019. The experiment used a completely randomized design (CRD), with five treatments and five replications. The treatments were LOF prepared for four, five, six, and seven weeks of incubation. No LOF was allocated as control. The result showed that the incubation time for LOF preparation had no significant effect on plant height, the number of leaves, stem diameter, ear weight, and ear length of sweet corn. It is suggested that the preparation of Tithonia enriched LOF be incubated for four weeks.

Keywords: liquid organic fertilizer, time of incubation, *Tithonia diversifolia*, sweet corn.

Attack intensity of *Spodoptera frugiperda* (Lepidoptera: Noctuidae) on corn crops in West Java: a preliminary survey

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Abstract

The presence of *Spodoptera frugiperda* have now detected in West Java. However, information on their attack intensity are lacking. The present study consists of baseline studies on the intensity of *S. frugiperda* to improve understanding of damage on corn plantation caused by FAW. The investigations were carried out in Garut and Tasikmalaya Regencies. At each location, plants were selected for recording observations on leaf damage following the Davis Scale. The results showed the intensity level was moderate in Wanaraja, Banyuresmi, and Sukaratu. On the other hand, Limbangan, one of the corn production center, showed high intensity of the pest (52.78%).

Keywords: Indonesia, invasive, Lepidoptera, new pest

Determination Of Agronomic Properties Of Tobacco (Nicotiana Tabaccum L.) Voor-Oogst On Chross Production Using Path Analysis

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Corresponding author: abdurrahman.salim@polije.ac.id Abstract.

Abstract

Tobacco is an important trade commodity in Indonesia because it supports the country's economy through taxes and excise. Cross analysis is used to measure the direct and indirect effects of agronomic character parameters that are strongly correlated with the results. The cross analysis in this study aims to find the agronomic characteristics of tobacco that can be used as selection criteria to get high krosok production. This research was conducted at the State Polytechnic Practicum in Jember. The number of samples used was 50 plants. Observation parameters included plant height, stem diameter, number of leaves per plant, foot leaf length, foot leaf width, middle leaf length, middle leaf width, shoot leaf length, shoot leaf width, leaf wet weight, yield, heavy weight. The results showed the wet weight of the leaves can be used as a direct selection criteria. The fresh weight of the leaves has a high positive correlation (Rx10y = 0.812), a high positive direct effect (Px10y = 0.924) and a contribution value of 75.007%.

Keywords: tobacco, agronomic characteristics, cross analysis, leaf wet weight

The Agronomy Performance And Financial Feasibility Of Hybrid Maize Varieties For Consumption And Cattle Feed In Difference Planting System

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Abstract

This study aimed to understand the agronomy performance and financial feasibility of young harvest hybrid maize for consumption and cattle feed in different planting system. Research was carried out at Subak Palbesi, Gerokgak Village, Buleleng Villange, Bali Province from Mei up to Agustus 2019. Research was arranged by using Block Randomized Design with 5 treatments replicated for 5 times namely P1: Bima 20 URI variety by jajar legowo 2:1 planting system (100 cm x 50 cm x 20 cm and 1 seed/hole) ; P2: Bima 20 URI variety by jajar legowo 2:1 (100 cm x 50 cm x 40 cm and 2 seeds/hole) ; P3: Bima 20 URI variety by tandur jajar (80 cm x 40 cm and 2 seeds/hole) ; P4: Pertiwi variety by tandur jajar ((80 cm x 40 cm and 2 seeds/hole) and P5: Pertiwi variety by farmer's way. Variables observed consisted of 1) agronomy data namely the growth performance and yield component, 2) financial feasibility and 3) cattle feed potential. Agronomy data was analyzed by using analysis variance (ANOVA) and LSD 5% ($P < 0.05$) and the financial feasibility was calculated by using B/C ratio analysis. Results showed that the growth from all treatments were similar meanwhile the treatments affected to yield components particularly P1-P4 treatments to P5. Jajar legowo 2:1 planting system in P1 and P2 increase the maize plant population up to 6.66% following by the yield increasing were 85.97% and 83.27% respectively compared to farmer's way (P5). In additional, the carrying capacity of maize waste for cattle feed reached up to 47.13% (P1) and 43.78% (P2) by jajar legowo 2:1. The highest of B/C ratio was obtained from P2 (1.98) and P1 (1.68) by jajar legowo, following by P3 and P4 (1.59) and P5 (1.38) by tandur jajar. P1 and P2 treatments can be recommended to farmers to enhance the yield and income.

Keywords: Hybrid maize; Growth; Yield; Planting system ; Cattle feed potential

Cultivation without Burn in Peat Land to Reducing the Impact of Climate Change

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Abstract

Peatlands as part of the masginal land in agricultural business require special treatment. So far, generally, to improve the characteristics of the land by designing and burning the remaining biomass in order to obtain ash from the combustion. Burning in peatlands can be risk of widespread fire will also play a role in contributing elements of greenhouse gases which will have an impact on climate change. The Faculty of Agriculture, Tanjungpura University since 1994 has conducted research related to the use of coastal sediment as a substitute for burning ash or agricultural lime. Apart from that, it is also developing a simple package of cottage combustion technology if it will continue to burn the remaining biomass from the previous planting in order to obtain the remaining ash from the combustion.

The Application of Compost Block from Coffee Husk and Animal Manure As a Nurseries Media of Cayenne Pepper Plants

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Abstract

The consumption level of cayenne pepper in Indonesia increase every year. Cayenne pepper usually uses nurseries media from plastic polybags that difficult to decompose dan pollute the environment. Nurseries media are the important role that can increase production from plants. Coffee husk and animal manure have nutrients compound that useful for compost block to increase plant growth. Compost block from coffee husk and animal manure can be the alternative nurseries media of cayenne pepper that was environmentally friendly. The aim of this study was to know the nutrients composition of compost block and the influence of compost block utilization on the seedling rate of cayenne pepper. This study used a completely randomized design (CRD) in four treatments with coffee husk level (5, 10, 20 %) in animal manure compost and soil as a control treatment. Variables observed were nutrients composition, plant height and number of leaves. The results showed that the use of 20% coffee husk in animal manure compost has the highest nutrient composition and the best growth of cayenne pepper. It can be concluded from the current study that supplying 20% coffee husk with animal manure in compost block improves the growth of the nursery cayenne pepper.

Keywords: compost block, cayenne pepper plant, coffee husk, animal manure

The Application of Plant Growth Promoting Rhizobacteria As a Growth Promotor Mustard Greens (Brassica juncea L.)

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Abstract

One of the factors that influence the good cultivation forces is good land. Limited land and use of excess chemical fertilizers become land agricultural less productive so that efforts to improve the land are needed to support the cultivation process by utilizing soil microorganisms to improve the physical, chemical, and biological properties of the soil through the Plant Growth Promotor Rhizobacteria (PGPR) application. PGPR was the main role to produce a promoting substance Indole Acetic Acid (IAA) to stimulate root tip propagation and expansion of the root absorption field. The aim of this study was to know the effect on the root growth of mustard green plants. This study used a student T-test in two treatments of PGPR. Variables observed were root growth of the mustard green plant. The results showed that the use of PGPR can increase root growth and division of root cells. It can be concluded from the current study that PGPR improves the growth of the mustard green plant.

Keywords: PGPR, mustard green plant, root growth

Wind Damage and Yield Recovery in *Hevea* Rubber Plantation

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Abstract

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The recent study observed the damage type and the effect on the yield and dry rubber content (DRC) in wind damaged and one-year recovery of rubber trees. The observation covered 11 sites consisted of 8, 11, 12, and 15 years of PB 260 clone. The damage type was distinguished into curved, cracking curved, broken branch, broken stem, and uprooted. Latex samples were collected from each damage type and compared with normal trees. The observation exhibited that the broken stem and uprooted trees were found in the center of the impacted area, whereas curved and broken branch trees located in the outer. The proportion of curved, broken branch and uprooted trees increased by plant age, while the proportion of broken stem decreased. The wind damage inflicted a significant yield loss and DRC decrease. The curved trees showed the least impact on the yield, yet it was reduced by nearly 50 % and the DRC lower around 4.92 % compared to normal trees. Nevertheless, when the curve accompanied by cracking, the yield loss and the DRC decrease were more severe. The one-year recovery trees indicated that they did not fully recover. Our study highlighted the necessity of plant breeding in wind damage resistance.

Keywords: *Hevea brasiliensis*; wind damage; tree recovery; latex yield; dry rubber content

Leaf morphology of Brazilian spinach (Alternanthera sissoo) as a backyard vegetable during the Covid-19 pandemic

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Abstract

The utilization of backyard gardens to fulfill family food by the Indonesian people needs to be developed, along with fulfilling nutrition during the Covid-19 pandemic. One of the plants that have the potential to grown is Brazilian spinach (Alternanthera sissoo). References on the morphology of Brazilian spinach are still limited, so it is necessary to observe the plant organs. This study aims to determine the leaf morphology of Brazilian spinach as vegetables in backyard gardens. Morphological observations of this spinach leaves were carried out visually at the Integrated Laboratory of the Agroecotechnology Department, Faculty of Agriculture, Lambung Mangkurat University, in August 2020. The results showed that Brazilian spinach has a herbaceous with a single leaf in a heart shape (cordatus). It has tapered leaf tips (acuminatus); notched leaf base (emarginatus); wavy leaf margin (repandus); simple palmate leaf venation (palminervis); and bullate upper leaf surface (bullatus). The arrangement of its leaves is folia decussate, that is, in each nod has two leaves that emerge opposite each other.

Keywords: backyard, botanical, brazilian spinach,

A Biological Agent May Not Appropriate For Controlling All Plant Pathogens

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Abstract

Soil microbes can act as biological agents to control pathogens, for example *Streptomyces sp., Rhizopus, Penicillium. Streptomyces sp*. known to produce secondary metabolites in the form of antibiotics which inhibit the growth of several pathogenic fungi. Streptomyces sp. is known to control damping off and fusarium wilt on cotton. One Streptomyces species inhibited 0.42% *Fusarium oxysporum* growth (moler pathogen) *in vitro*, however, *in vivo* did not suppressed the development of moler disease which indicated by the low value of severity, infection rate and low efficacy of disease suppression. However, if Streptomyces sp. applied to peanut leaves, it reduced the severity of disease in varieties of Gajah, Garuda, Kancil and Hypoma 1, which indicated by a high disease suppression with efficacy value more than 50%. So this was an example that one Streptomyces species was effective for controlling Cercospora leaf disease in peanut, but not effective to control the moler disease in shallots.

Keywords: *Streptomyses* sp., moler disease in shalot, and Cercospora leaf disease in peanut

Lipid Lowering Effect Of Fermented Red Dragon Fruit (*Hylocereus polyrhyzus*) In Rats Fed On High Cholesterol Diet

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Abstract

Functional foods have several beneficial effects on health, such as reducing cholesterol, preventing cardiovascular disease, lowering blood hypertension, and combating cancer. Red Dragon fruit (*Hylocereus polyrhizus*) are already used as a functional food. This fruit is rich in vitamins, fibers, polyphenol, phenolic, flavonoid, minerals, and phytoalbumin. The purpose of this study was to determine the effect of fermented red dragon fruit (fRDF) in the lipid profile in rats fed a high cholesterol diet. The fermentation of red dragon fruit was carried out by *Lactobacillus bulgaricus*. The total phenolic content (TPC) of fRDF was performed using a spectrophotometer. Thirty Wistar rats were randomly divided into six groups: group A normal control was given standard diet, group B negative control was given high cholesterol diet (HCD), group C positive control was given HCD and gemfibrozil 10.8 mg/200 gBW); Group D, E and F were given HCD and fRDF at dose 150/200 gBW, 300 mg/200 gBW and 600 mg/200 gBW. On day 36, LDL and HDL were measured using biochemical test kits. The highest TPC content at two days fermentation was 208 mgGAE/100 mL. This study showed that fermented red dragon fruit could reduce LDL levels in serum, but there wasn't significant increase HDL level.

Keywords: fermented red dragon fruit, LDL, HDL, wistar rats

Determination Of Classification Model And Phytochemical Content Extract Methanol Of Juwet Leaves In Different Altitude Using NIR Spectroscopy And Chemometric

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Abstract

Juwet (Syzygium cumini) is one of the plants of the Myrtaceae that can be used as a traditional medicine in Indonesia. The purpose of this research was to study the capability of NIR and chemometric methods to classify juwet plants based on classification models (LDA, SIMCA, SVM, CA) and determination phytochemical content of juwet plant, which planted in some areas with different altitude. Juwet leaves were extracted by using methanol and then scanned by using NIR of which the classification models are generated. All models showed an accuracy value of 100%, except CA that showed two clusters, cluster A is the altitude of 22 mdpl and 44 mdpl, while cluster B namely to the altitude of 7 mdpl, 73 mdpl, 59 mdpl, 99 mdpl, 512 mdpl, 559 mdpl, and 1040 mdpl.

Keywords: *Syzygium cumini*, NIR, Chemometrics

Determination Of The Antioxidant And Antidiabetic Activity Of Cocoa Leaves Extract Using In Vitro Study

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Abstract

Cocoa *(Theobroma cacao L.)* is a mainstay commodity product of Jember city where the seeds have been proven to have antidiabetic activity through the inhibitory effect of α-glucosidase and α-amylase enzymes. Other plant parts, especially the leaves, also have the potential to have antidiabetic activity. The aim of this study was to determine the antioxidant and antidiabetic activity of methanol (EM), ethanol (EE), and ethyl acetate (EEA) extracts of cocoa leaves. Determination of antioxidant and antidiabetic activity using the DPPH method and α-amylase enzyme inhibition by uv-vis spectrophotometry. The results showed that the different types of solvents used would have a significant effect on antioxidant and antidiabetic activity. The IC50 results for the antioxidant activity of the IEM, EE, and EEA extracts were 34.543 ± 0.519 µg/mL, 37.565 ± 0.348 µg/mL, 678.213 ± 2.179 µg/mL, respectively. The IC50 antidiabetic activity of the IEM, EE, and EEA extracts was 27.619 ± 0.325 µg/mL, 77.094 ± 1.310 µg/mL, 354.683 ± 5.905 µg/mL, respectively. Pearson's correlation test between% DPPH attenuation and% inhibition of α-amylase enzyme in methanol extract showed a positive correlation.

Keywords: cocoa leaves, antioxidant activity, antidiabetic activity, % DPPH reduction, % inhibition of the α-amylase enzyme

The Anti-Inflammatory Effect Of Ethanolic Stem Extract From *Vaccinium Varingiaefolium* On Plantar Thickness Of Carrageenan-Induced Mice

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Abstract

Mentigi (*Vaccinium varingiaefolium*) is a plant that grows in around volcanic craters of Java island. According to several studies, the plant contained various anti-inflammatory compounds. The aim of this study were to determine the anti-inflammatory effect of 70% ethanolic stem extract of *V. varingiaefolium* using carrageenan-induced paw oedema model in mice and to measure total phenolic content (TPC) and total flavonoid content (TFC). The results exhibited that the dose of 1200 mg/kg had the highest percentage of anti-inflammatory effect of 8.587%. Moreover, the extract contained TPC and TFC of 86.800 ± 0.790 mg GAE/g extract and 26.905 ± 0.119 mg QE/g extract. The study showed that the extract of *V. varingiaefolium* was potentially developed as a new anti-inflammatory agent.

Keywords: *Vaccinium varingiaefolium*, anti-inflammatory, total phenolic content, total flavonoid content

The Antioxidant Capacity of Herbal Teas Made from Jackfuit (Artocarpus heterophyllus) Leaves and Spices

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Abstract.

The study aimed to analyse the antioxidant capacity and main antioxidant content of herbal teas made from jackfruit leaves and spices in a variety weight ratios. The spices used are a mixture of cardamom, cloves and deaf. The manufacturing of herbal teas started with sortation of jackfruit leaves and spices, washing and steaming the leaves, drying, grinding, mixing, and brewing. The main antioxidant content that analyse were flavonoids and tannins using sphectrophotometry method, while the antioxidant capacity was analyse using DPPH method. The results show that the jackfruit leaves/spices ratios affect on flavonoid and tannin content, also antioxidant capacity. The ratio III (the highest proportion of jackfruit leaves) produce the herbal tea with the highest content of flavonoids (3,531.79 mg/L) and tannins (675.56 mg/L), whereas its antioxidant capacity was the weakest (IC50 = 74.92 ppm).

Keywords: jackfruit leaves, flavonoid, tannin, antioxidant capacity Corresponding

The Quality Improvement of Yam Flour (*Dioscorea alata*) Through The Fermentation Process

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Abstract

Yam (Discore alata) is a local tuber that can be used as a substitute for wheat flour and a source of non-rice carbohydrates. The processing into flour expands the diversification of yam's product. However, the flour produced does not resemble wheat flour, so the processing needs to be modified. This study compared several properties of modified yam flour with 4 treatments. The four treatments were fermentation for 12 hours with Bi-Mocaf starter, fermentation for 18 hours with tape yeast, fermentation for 72 hours with pure water and without fermentation. This study found: yam flour had an average moisture and ash content of 19% and 9.00%. The fermentation with tape yeast produced the highest yield (20.40%). The highest amylose content (7.23%), highest protein (4.25%), highest viscosity (3.65 cp), highest carbohydrate (74.20%), and highest energy (319.81 kcal) were produced by fermentation in 12 hours with the Bi-Mocaf fermentor. The highest dietary fiber (18.27%) and the highest fat content (0.780%) were produced by without fermentation. The processing into flour is expected to expand product diversification and increase the added value of yam tubers.

Analysis of Carrying Capacity of Food Crop Waste as Contributive of Beef Cattle Feed Related to the Availability of Animal Protein in Gorontalo District New Normal Adaptation Period

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Email:

Abstract

This study aims to analyze the carrying capacity of food plant waste as a contributive beef cattle feed related to the availability of animal protein in the Gorontalo District during the new normal adaptation period. This research is a descriptive study using primary and secondary data. The data obtained is then calculated the carrying capacity of food plant waste for BK, PK, and TDN. The results obtained were for the highest land carrying capacity in the Pulubala District with a total BK of 24.473.48; total PK 1.535.739,09; and total TDN 1.889.619,27. While the lowest was in the Telaga Jaya District with a total BK of 280,67; total PK 15.887,20; and total TDN 19.863,70. This shows the ability in each District of Gorontalo to produce feed, especially in the form of forage for beef cattle in fresh or dry form, without going through processing.

The Effect Of Chrysanthemum Leaf And Sugar Composition In Manufacturing Ready To Drink Beverages, And Its Added Value Analysis.

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Abstract

In the cultivation of chrysanthemum ie. pinching and ordering process, produces leaves as a by-product. The chrysanthemum leaves contain polyphenols which are beneficial for health. This research was conducted in July - December 2018 at the 'Asta Bunda' Chrysanthemum Farmers Association and the Postharvest Laboratory of Yogyakarta Assesment Instutute for Technology (BPTP Yogyakarta). The purpose of this study was to determine the effect of chrysanthemum leaves and sugar composition on consumer preferences and calculate the obtained added value. The research was carried out by experimental methods with a completely randomized design with 2 factors. The first factor were the addition of dried chrysanthemum leaves, which were 2.5; 5; and 7.5 grams in 250 ml of steamed water. The second factor were the percentage of added sugar, which were 12.5 and 25 grams. The preference test uses a hedonic test conducted by 40 untrained panelists. The polyphenols analysis using the Follin Ciocateu method. Statistical analysis using ANOVA followed by Duncan Multiple Range Test (α = 0.05%). The results of the study shows: 1) The addition of dried chrysanthemum leaves and sugar affect the panelists' preference for color, taste, sweetness, and overall response parameters. 2) The highest panelists preference produced by a composition of 2.5 grams dried chrysanthemum leaves and 25 grams sugar in 250 ml steamed water, with polyphenol levels 0.2261%. 3) The highest panelist's preference produce Rp 1.398.224,00 added value/month with added value ratio ie. 99,78%. Based on added value and added value ratios obtained, the production of chrysanthemum leaves ready to drink is feasible.

Keywords: composition, flower leaves, instant drink, panelists' preference, added value.

Potential of Food Crop Waste as One of Beef Cattle Feed Providers Supporting Meat Self-Sufficiency in Gorontalo District during the New Normal Period.

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Abstract

This study aims to determine the potential of food crop waste as a provider of beef cattle feed to support meat self-sufficiency in the Gorontalo District during the New Normal period. This research is a descriptive study using primary and secondary data. The data obtained is then calculated for the analysis of livestock performance to see the growth rate of beef production and the analysis of the concentration index for agricultural waste feed production in the Gorontalo District. The results obtained indicate that the growth rate of beef production in the Gorontalo Regency is In (y) = 13.50 + 0.12 t so that the growth rate increases by 12%. Furthermore, the IKPP value in the Gorontalo District is still in the low category in 12 Sub-Districts, the medium category in 4 Sub-Districts, and the high category in 3 Sub-Districts. This shows that the availability of beef cattle feed is not fully fulfilled if it only relies on existing food crop waste even though there is a growth in meat production in the Gorontalo District.

The Correlation Between Glucomannan, Calcium Oxalate And Crystal Density In Porang (*Amorphophallus Muelleri* Blume) Corms

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Abstract

Porang Corms usually contain of glucomannan, calcium oxalate and its solid form called crystal CaOx. Glucomannan is widely known as food source which is good for health. On the contrary, calcium oxalate content and CaOx crystal also contained in corms can cause health problems, e.g. allergic and kidney stone. The effect of these contrasting compounds causes the use of porang corms in Indonesia to be still limited. There was an assumption that the accumulation of these compounds contained in the porang tubers are related to each other. The objective of this study was to observe the correlation between of glucomannan, calcium oxalate content and crystal density in the corms. 95% isopropyl alcohol was used in extraction process to coagulate the glucomannan. There were three stages of calcium oxalate content extraction process was conducted, i.e. digestion, precipitation and titration. CaOx crystal was observed by clearing the corms tissue. The result showed that 24.7% of crystal density and 39.2% of calcium oxalate content was influenced by glucomannan content. It can be said that the increasing of glucomannan can lead to the increasing of calcium oxalate synthesis and number of crystals.

Keyword: correlation, calcium oxalate, crystal, glucomannan, porang

Free radical scavenging and angiotensin I-converting enzyme inhibitor potency of red and black pigmented rice seed protein

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Abstract

The potential source of bioactive protein from pigmented rice seed was extracted from two varieties of pigmented rice, Merah-SP (red), Gogo Niti-2 (black), and non-pigmented rice (IR-64) as a control. The potent contributor to free radical scavenging of extracted proteins were evaluated by analysing their free amino acid composition. The free radical scavenging and angiotensin-I converting enzyme (ACE-I) inhibitory activity of these proteins were also analyzed. The free radical scavenging activity was measured by a radical cation 2,2-azinobis-3-ethylbenzothiazoline-6-sulphonate acid ($ABTS^{\bullet+}$), hydroxyl radical ($OH^{\bullet}$) and protections against hydroxyl radical-mediated DNA damages. Total of free a mino acid content were varied, which is Gogo Niti-2 has the highest abundant antioxidant amino acid grouping, and also shown significantly higher in $ABTS^{\bullet+}$ and $OH^{\bullet}$ activity. Moreover, Ketam Hitam-2 also exhibited the ACE-I inhibitory activity and protected hydroxyl radical-induced oxidative DNA damage. The data obtained by the *in-vitro* systems established the free radical scavenging, and ACE-I inhibitory potency of Ketan Hitam-2 seed protein could be utilized as a natural nutraceuticals compound.

Keywords: ACE-I inhibitory, free radical scavenging, pigmented rice, protein

The Preventive Effects of MOCAF-based Analog Rice on The Pathogenesis of T1DM Through Improvement Gut Microbiota Composition

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Abstract

Type 1 diabetes mellitus (T1DM) is caused by an autoimmune reaction which is cause destruction of the pancreatic β-cells. Diet plays a role in that reaction because it causes alterations in the gut microbiota (GM) composition then stimulate pathogenesis of T1DM. The aim of this paper is describe the preventive effects of modified cassava flour (MOCAF)-based analog rice (MBAR) on the pathogenesis of T1DM. This paper is a literature review through a literature search in scientific journals that explains about diet and pathogenesis of T1DM. MBAR contains high fiber and resistant starch (RS). Fiber and RS increase the number of profitable GMs, on the contrary, lowering harmful GMs. Profitable GMs such as Lactobacilli may ferment fiber and RS then produce short-chain fatty acids (SCFAs) and mucin. The SCFAs may stimulate glucagon-like peptide production that has protection effect of β-cells from apoptosis, while the mucin has a protective effect of the integrity of the gut epithelium. Some of the GMs antigens stimulate an autoimmune reaction through T lymphocytes. The others produce flagellins and peptidoglycans that trigger T1DM through a local chronic inflamation. It can be concluded that the MBAR may prevent the pathogenesis of T1DM through improvement gut microbiota composition.

Keywords: analog rice, resistant starch, MOCAF, microbiota, β-cells

The Effect Of The Polishing Process And Sorgum Type (Brown And White) On The Content Of Crackers Nutrition

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Abstract

Sorghum or *cantel* is a staple foodstuff inferior in Yogyakarta, when compared with other cereal species. Sorghum crackers are snacks made from sorghum flour, starches and seasonings with the final frying process. This study aims to determine the effect of polishing and types of sorghum (red and white) on the nutritional content of crackers. Nutrient content analyzed included water, ash, protein, fat, crude fiber, carbohydrate, energy and beta carotene functional. Laboratory analysis data showed that the type of sorghum and polishing treatment affected the nutritional content of the cracker products. Polished white and red sorghum produces higher levels of ash, protein, energy and beta carotene in the cracker product than unpolished. Crackers from polished white sorghum have higher protein content (7.74%) compared to crackers from polished red sorghum (5.71%), whereas crackers from milled red sorghum have advantages in beta carotene (2134.16mg/100g) which is higher than crackers from polished white sorghum (53.01mg/100g). Polishing white sorghum can produce high-protein crackers, while polishing red sorghum can produce crackers with a high content of beta carotene functional.

Keyword: polishing, sorghum type, crackers, protein, beta-carotene

Post-Harvest Harvest Management For Extensive Save

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Abstract

Chili is an easy commodity to experience perudable quality and a very short shelf life (2-4 days). Therefore, post-harvest handling is needed starting from harvesting to transportation must be done carefully, the level of damage that occurs from the field to the retail level is 23%. Damage to the chili can occur mechanically. As a result of the damage is very detrimental. Therefore, in order to maintain the quality of chili until the hands of buyers, good handling is needed from harvest to post-harvest. Packaging is an activity to protect the freshness of agricultural products when transporting, distributing and storing. In addition, the packaging serves to protect the product from physical, mechanical, microbiological damage, as well as creating attraction for consumers and extending product shelf life. Use of suitable packaging types and storage temperatures is an important factor for maintaining quality and extending the shelf life of vegetables. Packaging can prevent the product from drying by modifying the atmosphere with high humidity. Packaging is also one of the ways to inhibit the process of respiration and transpiration so that the chili does not rot easily and wrinkles. The optimization of packaging technology to slow down the rate of deterioration in quality and extend the shelf life of chili The purpose of this paper is to know the chilli storage innovation with various packaging to extend the shelf life.

Keywords: Chili, Post Harvest, Quality, Horticulture

Nutrition Management Of Arabica Coffee Based On Ssnm Technology (Site-Specific Nutrient Management)

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Abstract

Smallholder plantations (96% coffee) were only able to contribute 73% of national coffee production. It is very different from state and private plantations where 4% of land is able to contribute 27% of national coffee production. This condition occurs because the productivity of the smallholder plantations is very low. The low productivity of smallholder plantations is caused by several reasons, namely: unclear coffee varieties, old coffee plants, not optimal maintenance and inappropriate fertilization. Fertilization is one of the causes of low people's coffee productivity. The aim of the study was to find out what values of N, P and K were lost when the crops were harvested from the land in various Arabica coffee fields owned by farmers. The value of the loss of the elements N, P and K will be the basis for determining fertilization recommendations for farmers. The experiment was designed using randomized complete block design (RCBD) 2 factors with 3 replications. The research was conducted in Situbondo and Bondowoso. The parameters observed were wet weight of coffee logs, volume of coffee logs, dry weight of coffee logs, dry weight of coffee beans, dry weight of coffee beans, soil (pH, N, P, and K) and NPK of coffee cherries.

Keywords: coffee, nutrient, fertilization

The Role Of Rhizobacteria To Control Rhizoctonia Disease And To Improvement Plant Growth Of Soybean On Sub-Optimal Dry Land

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Abstract

Rhizoctonia disease is caused by the *Rhizoctonia solani* fungus. *R.solani* is a soil pathogen and is very dangerous because of its ability to persist in soil (soil borne pathogen) for a long time. Controling by chemical not effective because they are have negative impact for example pollute the environment, harm non-target organism and harmful to humans. For that efforts are required alternative control an effective and environmentally friendly , one of them is by use bacteria PGPR (Plant Growth Promoting Rhizobacteria). Rhizobacteria an important role as biofertilizer because it is able to boost plant growth throught stimulate nutrient absorption from soil. Bacteria PGPR also serves as biostimulan which can produce fitohormon so expedite the growth of plants as well as act as bioprotectan that protects plant of pathogens attack. Some the genus of bacteria often use are *Pseudomonas* and *Bacillus*. A number of studies have shown that bacteria rooting *Pseudomonas fluorescens* and *Bacillus subtilis* able to control a plant pathogen. The aims of research to understand the role of rhizobacteria *P. fluorescens* and *B. subtillis* potential in controlling rizoctonia disease and improvement plant growth of soybean. The research was conducted in laboratory and greenhouse of Agriculture faculty, University of Jember. The research of effectiveness antagonistic bacteria done through two stages are in vitro and in vivo research. The result in vitro research showed that combination bacteria antagonistic *P. fluorescens* and *B. subtillis* provide better than single treatment, with inhibation is 88,1 % on 7 days after inoculations. While in vivo research showed that a combination of both the bacteria is also the best results with the disease insidence 12.4 % with frequency application 3 times, the control (not treatment) showed disease insidence 25,6 % with frequency application 4 times. The variables of observacion were N-total of tissues (%) shows that combination treatment bacteria better than the single treatment, with the N precentage is 0,499 % and heavy dry up to 4,12 %.

Keywords: *Rhizoctonia solani, Pseudomonas fluorescens, Bacillus subtilis*

Screening of Drought Tolerance Brown Rice Mutant with Ethyl methansulfonate (EMS)

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Abstract.

Research to obtain drought- tolerant brown rice was carried out using a chemical mutagen Ethyl methansulfonate (EMS) due to frequent conditions of water shortages in the rice planting area, Brown rice generally requires a lot of water to support optimal growth and yield, the presence of drought or lack of water can reduce plant growth and yield and even death of the plant . Brown rice is a food material that has advantages in terms of nutritional content such as protein ,lipid, vitamin , minerals and dietry fiber so that it is widely used as functional food to support health.. This research using Aek sibundong brown rice variety as a plant material. The rice seeds were treated with EMS using concentrations of : 0; 0,1; 0,2; 0,3 and 0,4 % , then seed planted on the plastic pot with conditions of optimal watering and sub optimal watering in order to obtain a combination of treatments as follows : EMS 0%, with optimal watering /control-1); EMS 0 % with sub optimal watering (75 % of filed capasity/ control-2) , and EMS with doses of 0.1%, 0.2%, 0.3% and 0.4% with sub-optimal watering. Plants character observed were plant growth, physiological characters, yield and seed quality . The results showed that there were several plants mutant especially from EMS treatment with doses of 0.1 and 0.2 % gave better performance of, growth, physiological character, yield and seed quality compared to the control treatment

Keywords: Brown rice, EMS, drought tolerance.

Quality Characteristics Of Cooked Rice With Water-To-Rice Ratio From Several Local Paddy Varieties In East Java, Indonesia

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Abstract

This research aimed to study the effects of cooking water-to-rice (W/R) ratio on the quality characteristics of cooked rice of several local paddy varieties in East Java, Indonesia. The research material is black rice (melik), brown diamond rice, and red A3 rice from local farmers. There are several rice quality analysis stages: preparing raw materials, washing rice, adding water, cooking rice, measuring texture, measuring color, and measuring water content. Cooked rice samples from three local paddy varieties with three W/R ratios 4, 4.5, and 5 on a weight basis. Data analysis used a two-way analysis of variance with two influencing factors: water-to-rice ratio and local paddy varieties. The measured observation variables were texture, color, and water content. The highest hardness, cohesiveness, and gumminess value on melik with W/R ratio 4, respectively 8,18 N, 0,27, and 2,17 N. The highest springiness value on brown diamond rice type with W/R ratio 5 was 3,47. The highest chewiness value on A3 red type with W/R ratio 4 was 7,13 mJ. The highest L and b value on brown diamond varieties with W/R ratio 4 each were 70,5 and 10,2. The highest value on red A3 type with W/R ratio 4 was 14,4. The highest water content value in brown diamond varieties with W/R ratio 5 was 71,91%. Based on the results, it can be concluded that the water-to-rice ratio of cooking and rice varieties can significantly influence on the value of hardness, cohesiveness, gumminess, chewiness, brightness (L), redness (a), yellowish level (b), and water content in the rice.

Preservation Using Galangal Extract And Nanozeolite With Individual Packaging Of Lowdensity Polyethylene To Support The Export Of Zalacca (*Salacca Edulis* Reinw)

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Abstract

Zalacca is a tropical fruit that has the potential to be developed and become an export commodity. Zalacca has a short shelf life as it is easily damaged by fungal infections, mechanical factors, and respiration during transport and storage. Therefore, this research was aimed to obtain the preservation method that can maintain quality and extend the shelf life of zalacca in a room with a temperature of about 20˚C. The experimental design used was a completely randomized design with six treatment combinations of galangal extract, nanozeolite, low density polyethylene bag and plastic baskets. The results showed that all treatments could maintain the quality of zalacca for 5 days, and on the 10th day of storage the damage was more than 10 percent. The best method of preserving zalacca during the observation of 30 days of storage is the application of galangal extract and individual packaging of LDPE with 9.11% weight loss, 13.46% total sugar, 83.41% moisture content, 13.18 mg vitamin/100 g material and 20.5 cfu/g total fungal. The organoleptic test results showed that until the 25th day of storage, skin freshness, taste, texture were still acceptable, but generally the panel preferred the taste without the galangal extract.

Keywords: Zalacca, packaging, storage, quality, shelf life

Food Safety Assay Of Alergenity On Sugarcane (*Saccharum officinarum* L) Genetic Engineering Products Protein Coat Resistant SCMV Virus (*Sugarcane mozaic* Virus)

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Abstract

Sugarcane mozaic virus (SCMV) is a virus from the Potyvirus family that causes mosaic disease in sugarcane. Coat protein (capsid protein) is a protein that plays an important role in the process of viral infection into host plants. In addition, capsid protein can also be used to induce resistance in plants. Sequence analysis of cDNA amplification showed that the 998-bp cDNA length was SCMVCp cDNA. The CP SCMV code is assembled in a binary vector pRI101-ON with two constructs, namely full sequence (p927) and N-terminal protein (p702) which is used to produce transgenic sugarcane. In tests carried out by infecting the SCMV virus, transgenic sugarcane plants were more resistant to mosaic virus infection than wildtype sugarcane. However, the issue of transgenic plants to human health and safety is concerned that they will express proteins or substances that can be toxic or have potential as allergens. For this reason, several countries and international organizations include the Cartagena Protocol (2000) and the Allimentariun Commission (2003) compiled by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) which was ratified by Indonesia and contained in PP No. 21 of 2005 entered into an agreement to standardize the safety tests of genetically engineered products which consist of food safety, environmental safety and feed safety assays. The safety assay conducted is allergenicity testing which includes bioinformatic, heat stability, digestion stability assays. The test was conducted to determine the potential for allergies caused by the use of transgenic sugarcane as food.

Keywords: *Sugarcane mozaic* virus (SCMV), coat protein, allergens.

The Effect of Binahong Leaf Meal (Anredera cordifolia (Ten.) Steenis) as Feed Additive on Digestive Organs Profile of Broiler Chickens

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Abstract

Bihanong (Anredera cordifolia (Ten.) Steenis) is known as an herb plant that has a biofunctional compound and is used for medical treatment. This study aims to determine the effect of binahong leaf meal (BLM) on the digestive organs' profile, namely intestinal length and weight (duodenum, jejunum, and ileum), and percentages of liver, heart, and bursal of broiler chickens. A total of one hundred and ninety-two male DOC of broiler were divided into six treatments with four replications, and each replication consisted of 8 birds. The treatment groups were: C (negative control), T: tetracycline 50 ppm (positive control), B1 (1% BLM), B2 (2% BLM), B4 (4%), and B8 (8% BLM). The data obtained were performed by analysis of variance and followed with Duncan's multiple range test. The results showed that BLM's addition increased to 8%, significantly different ($P < 0.01$), to jejunum length, ileum length, liver and heart weight percentage. Based on our study, it can be concluded that the addition of 2% BLM produced the best performance on the broiler's digestive organ profile.

Keywords: intestinal length, liver weight percentage, heart weight percentage

The Performance of Chitosan Addition and Food Processing in Sodium Content of Kawakawa (*Euthynnus affinis*) Brine Salting

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Abstract

Brine salting of fish is a method as preservative using salt. The molecules of salt will replace the water molecules inside of the flesh due to reduce the water content and the water activity (aw). This may result to inhibit of microbes abilities to growth. Standard sodium maximum levels according to SNI 2717:2017 is 10%. Consuming foods with high content of sodium, giving bad influence on human health. It can become a trigger of hypertension diseases. In this study, is to discuss how is chitosan performance in Kawakawa's brine salting sodium levels on two ways of cooking techniques, fried and stewed. The addition of 1.5% chitosan in fish floss and sarden dishes, showed increasing in sodium contents. Obviously, addition of 3% chitosan will reducing the contents of sodium in fish floss and sarden dishes respectively. It's can be conclude, higher level of chitosan addition in processing of Kawakawa brine salting on fried cooked as fish floss or stewed cooked as sarden dishes, it will reduce the sodium contents.

Keywords: Brine salting preservation, chitosan, cooking technique, hypertension, sodium.

Prevalency Of Acrylamide Contaminant On *Cimol* Street Food

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Abstract

Some study of evidence from animal studies reported that acrylamide and its metabolite glycidamide are genotoxic and carcinogenic. While evidence from human studies that dietary exposure to acrylamide causes cancer is currently limited and inconclusive. Acrylamide was resulted from frying process on starchy food like fried potato, fried cassava starch ("*Cimol*") etc. This study investigated prevalency of acrylamide contaminant on "*Cimol*", as Indonesian favorite street food. Three location was sampled using Simple random method. Sampling was conducted at first condition and the last condition during market display. The acrylamide levels contained in cimol from street food A1, A2, and A3 based on the differences in the time of taking ranged from 4.5 to 12.9 mg / kg. The lowest levels were found in A3W1 street food (4.5 mg / kg) and the highest levels were found in A1W2 street food (12.9 mg / kg). The levels of free fatty acids contained in cimol frying oil from street food A1, A2, and A3 with differences in the time of taking ranged from 0.92 to 1.55 mg KOH/g. This value exceeds the standard requirements for the quality of cooking oil stipulated by SNI 3741: 2013, namely a maximum of 0.6 mg KOH/g. Peroxide levels contained in cimol frying oil from street food A1, A2, and A3 with differences in extraction time ranged from 14.35 to 53.86 meq O2 / kg. This value exceeds the standard requirements for the quality of cooking oil set by SNI 3741: 2013, namely a maximum of 10 meq O2 / kg.

Keywords: Acrylamide, cimol, free fatty acid, peroxide

Nata Production As Edible Packaging Using Coconut Water And Molases

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Abstract

Nata is a secondary metabolite of glucose fermentation into cellulose by *Acetobacter xylinum*. Nata can be developed as an edible packaging. This study compared the production of nata using coconut water and molasses as medium. The addition of a working starter was carried out as much as 15% and 25% for coconut water and 3% and 6% starter for molasses. The difference in the main ingredients, the addition of a starter, and the added nutrition aims to determine the best composition in making nata. Nata production is necessary to add sugar, citric acid, NPK, and ZA to support microbial growth in forming cellulose. The first step in nata fermentation was by formulation media, inoculating starter, then fermentation during 14 days. Nata de coco and nata de molasses that had the most weight were those with a composition without the addition of citric acid, namely nata de coco with a starter concentration of 15% and nata de molasses with a starter concentration of 6%. The color of the nata was cloudy and has a thick size due to the addition of ZA. Good nata has a chewy texture, if too much starter was added to the nata, but the nata yield was less than optimal. If more acid condition, the nata aroma is the better quality of nata.

Keywords: *Acetobacter xylinum,* coconut water, fermentation, molases, nata

Application of Protoxidized Corn Starch Nanoparticle as Curcumin Encapsulant

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Abstract

The key challenge of encapsulation is the appropriateness of encapsulants possessing good binding properties, non-hygroscopic and non-aggregative. Maltodextrins is commonly used as an encapsulants for plant extracts and aromatic additives. However, the microcapsule obtained were often re-agglomerated causing a crack or leakage of the surface of the microcapsule wall. Therefore, corn starch nanoparticle is potential to be a co-matrix since this material is non-hygroscopic. The aim of study was to evaluate the characteristics of corn starch nanoparticles (CSNp) as curcumin encapsulants in comparison to maltodextrin (MD). The result showed that curcumin CSNp microcapsule possesses lower solubility, hygroscopicity, and encapsulation efficiency compare to that of MD encapsulated, but its drug loading and antioxidant activity are higher. The concentration of coating material significantly affects the efficiency of encapsulation, drug loading, solubility, hygroscopicity, and antioxidant activity. The 5% coating concentration in CSNp has the characteristics of microcapsules which are more water-soluble, more hygroscopic, lower encapsulation efficiency, drug loading, and antioxidant activity higher than that of 10% coating material.

Keywords: Corn Starch Nanoparticles, Maltodextrin, Curcumin, Encapsulation

Effect Of Shelf Life Of Edamame Eggurt On Ph, Humidity, Moisture Content, And Tat

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Abstract

Eggurt is a product derived from milk added with fermented egg white with the use of *Streptococcus thermophilus* and *Lactobacillus bulgaricus*, through a pasteurisation process stage. The purpose of storage in this study was to determine the effect of storage time at cold temperatures on pH, TAT, humidity, and water content. Types of experimental research. Eggurt with added edamame with a concentration of 5%, 10%, 15%, and 20%. The data were analyzed using a completely randomized design and if it was significantly different, it would be continued with the DMRT difference test with a level of 5%. The results showed no significant differences between pH, TAT, humidity, and water content of edamame eggurt. The highest pH value at 10% treatment is 4.7. The highest water content at 10% treatment is 90.5%. The highest TAT was at 10% treatment, namely 4.6. The highest humidity at 10% treatment is 0.8.

Keywords: Shelf life. Eggurt, Edamame, BAL

Physical quality determination of fresh strawberry (Fragaria x ananassa var. Oso Grande) fruit in tropical environment using image processing approach

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Abstract.

Strawberry (Fragaria x ananassa var. Oso Grande) fruit has a high economic value and healthy for human. However, there was a problem with strawberries quality for supply chain and can be deteriorated easily during the transportation process, especially in tropical environment. Image processing is one of the methods considered to be applied for rapid detecting using non-destructive method. Objective of this research was to compare the determination between conventional method and image processing method. Determination of the image processing method was using webcam 8 mp with 100% maturity level of strawberry fruit, then after acquisition of the sample of strawberry the data was analysed using Matlab software. Observations of the physical quality parameters observed including color and texture of skin, diameter, length, volume and the surface area of strawberries. Result from this studies show that the measurement of image processing of the color parameters (L *, a *, b *), diameter, length, area, volume were 74.05%; 76.74%; 66.89%; 96.50%; 93.70%; 92.50%; 96.42%, respectively. Based on statistical analysis, there is no significant difference between image processing and conventional measurements on all parameters except for the L* (lightness) parameter.

Keywords: Color, Image processing, Strawberry fruit, Physical quality, Texture

Effect of Waxing and Packaging Method on The Quality of Pontianak Siam Orange

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Abstract

Orange is a fruit that is easily subjected to the physical, chemical and biological changes during storage. The change in behavior was due to the absence of handling of the fruit after harvest. In order to maintain the quality of the fruit and extend the shelf life, the fruit was manipulated by waxing and packaging. The research objective was to determine the effect of waxing and proper packaging method on the quality of Pontianak Siam citrus fruit during storage 10 days after harvest. The research was conducted at the Post Harvest Laboratory of East Java AIAT in January 2018. The research design was arranged in a randomized block manner with 2 treatment factors. The factors are wax dyeing (waxing and non-waxing) and packaging methods (plastic baskets, black plastic bags, white plastic bags, transparent plastic, cardboard and fruit nets). The experiment was repeated 3 times per unit experiment / replication using 10 pieces. The results showed that on the second day after harvest there was a significant difference between the wax and the packaging method on fruit volume, fruit skin lightness color and fruit juice brightness color. While the waxing factor and packaging method were not different with respect to sugar content, acid content, fruit weight, juice volume, fruit juice color. For yellowish skin color, the packaging method is different but there is no difference in waxing, the packaging method with a white plastic bag is yellow. Observation on day 10 after harvesting wax did not affect fruit volume, fruit skin color, pest attack, juice color, sugar content, acid content and vitamin C, but it was effected fruit weight, skin brightness, juice volume, juice brightness and yellowish juice color. The way of packaging affects the volume of fruit, volume of juice, yellowish juice color and Vit. C

Keywords: Pontianak Siam Orange, waxing, packaging, quality.

Characteristics of TVP (Texturized Vegetable Protein) from Hyacinth Bean MOLEF (Modified Legume Flour)

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Abstract

Hyancinth bean (Lablab purpureus (L.) Sweet) has a high protein content (18-25%) and show high potency as a resource of vegetable protein. In order to enhance the bean functionality, fermentation was conducted by Lactobacillus plantarum on MOLEF (modified legume flour) production. The Hyacinth MOLEF was then manufactured as TVP (Texturized Vegetable Protein). This research was aimed to determine the best formulation of Hyacinth MOLEF and ISP (isolate soy protein) on TVP properties. The formulation of Hyacinth MOLEF and ISP were 100:0%; 80:20%; 60:40% and 40:60%. The TVP was then characterized its physical, chemical, functional properties including water and oil holding capacity (WHC; OHC), foaming capacity and stability, emulsification capacity. The research results showed that the best treatment was TVP which produced from 40% MOLEF of hyacinth bean and 60 % ISP. It has protein (67.49%), moisture (6.8%), fat (0.65%), carbohydrate (21.72%), ash (3.33%), lightness (46.82), and hue (102.87 º). Its showed high functional properties, as follows WHC (269.99%), OHC (84.12%), foaming activity (55.8 ml/g), foaming stability (5,33%), and the emulsification activity and stability were 8.74 m^2/g 4.22 hours, respectively. With high functional properties, TVP produced from MOLEF of hyacinth bean and ISP could be used as a novel food ingredient.

Keywords*: hyacinth beans, modification, ingredient*

Rumen Undegraded Dietary Protein and TCA Soluble Protein with Gambier Leave Residue Supplementation as a Source of Tannins in Cattle Feed Supplement

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Abstract

This study aims to obtain the optimal level of gambier leave residue (GLR) in cattle feed supplements based on the evaluation of rumen microbial degradation. Cattle feed supplement was prepared with isoprotein 29.53% and isoenergy 75.01% with supplementing GLR at level 0; 2.5; 5.0 and 7.5%. Rumen microbial degradation was evaluated in vitro method using cattle rumen fluid in 4 observation times of 0, 3, 6, 12, 24, and 48 hours of incubation. The results showed that the degradation of dry matter and organic matter decreased ($P < 0.05$) at the GLR level of 5.0 and 7.5% at 6, 24, and 48 hours of incubation. Crude protein degradation was highest at 3 hours of incubation and decreased significantly ($P < 0.05$) at all observation times. Rumen undegraded dietary protein and TCA soluble protein increased ($P < 0.05$) with the addition of GLR and the highest at 48 hours incubation. Regression analysis showed that the optimal GLR level in cattle feed supplement is 4.93%.

Keywords: Gambier leave residue, rumen degradation, rumen microbial, cattle feed supplement

Effects Of Canning Process On Sensory Properties Indonesia Traditional Foods

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Abstract

Canning process is the packaging method using cans packaging. The sterilization is main step in the canning process that is operated on temperature 121 °C and time of 15 minutes. Thermal process on 121 C caused the changes of sensory properties in food products. Therefore this study observed that the effect of canning process to sensory properties in traditional foods. The method of this study using panelist form to evaluate sensory properties of food before and after canning process. Parameters in form evaluation were aroma, colour, taste, texture and overall. Panelists involved i.e. packaging research team and traditional food restaurant owners. The result showed that canning process changes overall sensory properties attributes on food products to be more interesting. The colour of food product seen colourful and interesting with attribute score of 4-5, taste of food product more pervasive in main ingredient with score of 4, more flavorful aroma with score of 4-5 and more ripe texture with the score of 4.

Keywords : Canning process effect, sensory properties, food traditional

Study Of *Escherichia Coli and Salmonella sp* Meatball Trader In Bandar Creating Market Padang City

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Abstract

Almost all levels of society like meatball food. Even though they have undergone a process of processing, meatballs are not completely safe from microbial contamination. The high protein content in meatballs can act as a substrate for the growth of microorganisms. The research has been carried out at the Padang Industrial Research and Standardization Center on 15 October-14 November 2019. Meatball samples are household and industrial production which are determined on purpose (purposive sampling) in Padang City. The results showed that the sample of homemade meatballs in the analysis of *Escherichia coli* contamination obtained results of 4 APM / gram. The results of testing for *Salmonella* bacterial contamination were not found. Meanwhile, the meatball samples produced by the manufacturer showed that there were *Escherichia coli* bacteria contamination of> 2,400 APM / gram. and the results of testing *Salmonella Sp* bacteria contamination on meatball samples were not found Salmonella Sp bacteria. Based on the two test parameters, it can be concluded that the factory-produced packaged meat meatball samples and home-produced packaged meat balls are not suitable for consumption because one of the test parameters, namely the analysis of *Escherichia coli* contamination on meatballs, does not meet SNI 3818: 2014 concerning meat balls.

Keywords: meat balls, *eschericia coli*, *salmonella sp*

Portrait of Housewives' Knowledge of Moringa Oleifera Nutrition as a Plant Based Diet in West Kotawaringin Regency

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Abstract

The use of Moringa oleifera in a plant-based-diet is becoming very popular now. It can be eaten raw, cooked or air-dried and stored over a long period time. Moringa oleifera has high nutritional value and contains the capabilities of healing and relieving many health problem. This diet has the potential to improve blood lipid levels, reduce risk of heart diseases, lowe the risk of inflammatory diseases, decrease chances of type-2 diabetes, and improve overall health. In Indonesia, people still believe in the mystical aspect of Moringa oleifera, so it makes rarely consumed, despite the many benefits of the Moringa oleifera. This study aims to determine the knowledge of housewives on the nutritional value of Moringa oleifera leaves in West Kotawaringin district. This research is a descriptive study with a survey method to analyze. This research show that in general, the level of knowledge of housewives in Kotawaringin district is quite good on the nutritional value of Moringa leaves. There is a need for socialization of the nutritional content of Moringa leaves.

Keywords: Moringa oleifera, nutrition, housewife, plant based diet,

Optimization Formula for Addition of Pala Fruit Flour (*Myristica fragrans*) and Elephant Ginger Flour (*Zingiber officinale*) on the Making of Cookies Using Response Surface Method

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Abstract

Nutmeg is one of the spices that have high economic value, as for elephant ginger, spices with essential oils which are good for body health, but in some areas only utilize the juice such as making wedang. One of the side effects of nutmeg pulp and ginger elephant so that it has a high and useful selling price is by making processed products that are practical, easy to consume and much in demand, in the form of cookies derived from the addition of nutmeg pulp and elephant ginger pulp mixed into flour. The purpose of this study was to determine the optimum response of organoleptic tests that will be received by panelists. This research was experimental by using 5 variations of the formula which are processed using RSM (Response Surface Method) involving 29 untrained panelists and 1 expert panelist with test parameters including taste, aroma, texture and color. Formula F1 = 100% Nutmeg Fruit Flour, F2 = 75% Nutmeg Fruit Flour + 25% Elephant Ginger Pulp Flour, F3 = 50% Nutmeg Fruit Flour + 50% Elephant Ginger Pulp Flour, F4 = 25% Nutmeg Fruit Flour + 75% Elephant Ginger Pulp Flour, F5 = 100% Elephant Ginger Pulp Flour. The results of this study indicated that cookies with the addition of nutmeg pulp and elephant ginger pulp (F5) were the formulas most sought after by panelists, but in terms of utilization of the by products of wedang (F3) had the highest value.

Keywords: Nutmeg, Elephant Ginger, Cookies, Siege, Organoleptic, Response Surface Method.

The Effect Of Lime Of Dolomite And Npk Fertilizers On The Response Of Growth, Yield And Protein Content Of Black Soybean (Glycine Soja (L.) Merr) In Acidic Soils

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Abstract

The development of the cultivation of the plant black soybeans (*Glycine soja* (L.) Merr.) in the acidic soil can be an alternative to increasing the yield of plant black soybeans. However, the utilization of sour land is plagued by soil pH, high content of Al, Mn, and Fe as well as low availability of macroelements N, P, K, Ca, and Mg. The application of dolomite can create ideal conditions of soil pH for plant growth, increase the availability of Ca and Mg as well as improve soil structure. Application of NPK fertilizers can increase the availability of the elements N, P, K in soil, stimulate plant growth, and can improve the dissolved protein content. Varieties of black soybeans used are varieties of Detam 1 with yield potential reaches 2.46 ton/ha and protein content of 45,36 g. This study aims to determine the effect of the dose of lime dolomite and NPK fertilizer on the response of growth, yield, and protein content of plant black soybeans on acid soils. This research used Complete Random Design (CRD) factorial consist of 2 factors, each of which consists of 4 levels. The first factor, namely the dolomite, the second factor is the NPK fertilizers. The dose of lime dolomite 4.5 tons/ha was able to produce the dissolved protein content high of 4.30%.

Keywords: Dolomite, NPK fertilizers, Acidic soil, Dissolved protein content

Production of Friable Embryonic Callus (FEC) in Adira 4 Variety of Cassava (*Manihot esculenta* Crantz)

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Abstract

Cassava plants have getting special attention from the Indonesian government for food security. Cassava is a starch-producing plant that has high economic value as a food ingredient and as an industrial raw material. The improvement of the characteristics of the cassava plant could be processed through a biotechnological approach such as DNA transformation. To process of DNA transformation FEC material is used. However, each cassava plant has a different response to the formation of FEC, which inhibit FEC production. The objective of this study was to induce FEC in the Adira 4 variety of cassava . Cassava In vitro plants are made from Adira 4 cuttings which are about 1 month old with 3-4 nodes. The nodes were sterilized and were planted on CAM medium (4.43 g / l basal MS medium dissolved including vitamins, 2µM CuSO4, 10 mg / l BAP, and 2% sucrose) with horizontal position for 4 days to obtain swollen callus. Then the callus was transferred to the CIM medium made (4.43 grams of basal MS medium including vitamins, 2µM CuSO4, 12 mg / l picloram, and 2% sucrose) to multiply of FEC. The result that Adira 4 has a good response for swollen callus induction around 2 days, formation of somatic embryos is around 6.75 days, FEC induction around 6.75 days, and the percentage of FEC is around 93.75%. The Adira 4 is a good response to FEC formation. it can be used as a cassava model for DNA transformation.

Keywords: Adira 4, Friable Embryonic Callus (FEC), *Manihot esculenta* Crantz, Somatic Embryogenesis (SE) and Picloram

Evaluation of the Antibacterial Against *Bacillus cereus* and Antioxidant Capacity of *Bryophyllum pinnatum* (Lam.) Oken Leaves

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Abstract

Diarrhea is one of the infections being the most important health problem in developing countries, including Indonesia. Antibiotic therapy, one of the first-line therapies for infectious diarrhea due to bacteria, has a lot of resistance. In some studies, oxidative/nitrosative stress and depletion of the antioxidant system have led to pathological diarrhea. Based on a study of empirical use and prior research, *Bryophyllum pinnatum* (Lam.) Oken has the potential as an alternative treatment for bacterial diarrhea from natural ingredients and contains antioxidants. This study aims to determine the antibacterial activity and antioxidant capacity of the ethanol extract of *B. pinnatum* leaves against *Bacillus cereus*. Determination of antibacterial activity using the well diffusion method, total alkaloid and flavonoid levels were determined using the spectrophotometric method at a wavelength of 418 nm and 429 nm. The ethanol extract of *B. pinnatum* leaves was also fractionated with n-hexane, chloroform, ethyl acetate, n-butanol, and methanol solvents and then measured the antioxidant capacity of all samples. The results showed that the ethanol extract of *B. pinnatum* leaves had strong antibacterial activity at concentrations of 10, 30, 50, and 70 mg/ml. The antioxidant capacity of the ethanol extract of *B. pinnatum* leaves was TEAC 448.6 ± 18.3 µmol/g of extract. The total alkaloid and flavonoid levels in the ethanol extract of *B. pinnatum* leaves were 2.78 mg BE/g extract and 11.00 mg QE/g extract, respectively. Based on the data above, *B. pinnatum* has potential as an antibacterial and antioxidant agent.

Keywords: antibacterial, antioxidant, *B. pinnatum* leaves, *Bacillus cereus*

In Vitro Studies On Bacillus Sp. And Pseudomonas Sp. Compatibility With Botanical Pesticide

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Abstract

The effectiveness of botanical pesticides as an insect pest control agent in the rice plant has been proven in several studies. Despite being able to control pests, botanical pesticides have not been reported to promote plant growth. One technique for making botanical pesticides serve a dual function is to combine them with beneficial microbes. This study aims to determine the compatibility of 2 isolates of Bacillus sp. and 2 isolates of Pseudomonas sp. against botanical pesticides and bacterial cell density before and after being mixed with botanical pesticides. The botanical pesticides are made from a mixture of Ageratum conyzoides, Aglaia odorata, and Azadirachta indica leaves. The solvent used is 96% ethanol, and the process of making botanical pesticides is carried out using a rotary evaporator with a temperature of 45 ˚C. The compatibility test was carried out in vitro by dropping 10 µl of botanical pesticides on the bacterial culture. Tests were carried out using various concentrations, namely 0%, 25%, 50%, 75%, and 100%. The cell density test was carried out with the same concentration as the compatibility test. The test results showed that the Bacillus sp. BA1 strain is compatible with all assay concentrations. Then, the bacteria Bacillus sp. BA2 and Pseudomonas sp. PS2 are compatible with concentrations of 0 to 75%. Furthermore, the bacteria Pseudomonas sp. PS3 is compatible with assay concentrations of 0 to 25%. The cell density test results showed that at a compatible concentration, there was no significant decrease in cell density.

Keywords: *Ageratum conyzoides, Aglaia odorata, Azadirachta indica*, cell density, ethanol

Potency Of Plant Resistance Inducers Against Bacterial Wilt Disease On Tobacco Plant Production Caused By *Ralstonia Solanacearum*

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Abstract

Tobacco (*Nicotiana tobaccum* L.) is one of the most valuable crops in Jember. One of the destructive disease of tobacco is bacterial wilt disease caused by *Ralstonia solanacearum*. Plant resistance inducer (PRI) agents such as *Pseudomonas fluorescens*, flagella, and salicylic acid are known to have the potency to control plant pathogens by inducing mechanism of resistance in plant. However, there is still no study comparing their effectiveness in controlling bacterial wilt disease. The purpose of this research was to study the effectiveness of each PRI in controlling tobacco bacterial wilt disease. The molecular assay using Polymerase Chain Reaction (PCR) confirmed that FTb4 bacteria is *R. solanacearum* and used either as inoculum or as a source of PRI flagella. In addition, *P. fluorescens* IC1 was isolated from pepper plant rhizosphere in Jember. PRIs (Isolate IC1, FTb4 flagella, and salicylic acid) were applied to control bacterial wilt disease. In vivo result showed that treatment of PRIs with medium-resistant resistance criteria at 7 days before pathogen inoculation was successful in suppressing disease incidence up to 90-93 % and disease severity up to 33.33 %. Usage of PRIs on tobacco plants increased peroxidase activity and total phenol production, indicating that PRIs induced plant resistance.

Keywords: Bacterial wilt, *Ralstonia solanacearum*, Induce resistant, flagella

Lactobacillus Plantarum HL-15 Inoculum And Vacuum Packaging Can Inhibit The Growth Of Fungus During The Cold Storage Of Fermented Cocoa Beans

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Abstract

Several factors affecting cocoa beans quality were fermentation and packaging methods. Lactic acid bacteria (BAL) are known to inhibit fungal growth and vacuum packaging is one way to extend the shelf life of food products. Therefore, the research objective was to determine the effect of adding *Lactobacillus plantarum* HL-15 on the fermentation process and packaging method using polypropylene plastic on the quality of cocoa beans during cold storage. This research was carried out using Factorial Completely Randomized Design, with three replications. The first factor was addition of starter (S), which were S1 (with *Lactobacillus plantarum* HL 15), S2 (without *Lactobacillus plantarum* HL 15) and S3 control (without starter). The second factor was packaging method (V), which were V1 (vacuumed polypropylene plastic 0.8 mm in thickness), V2 (non-vacuumed polypropylene plastic 0.8 mm in thickness), V3 (nylon sack). The results showed that the addition of starter *Lactobacillus plantarum* HL-15 in the fermentation process can reduce the fungal of cocoa beans after drying reaches 2 Logs CFU/g. The combination of adding *Lactobacillus plantarum* HL 15 to the fermentation process and the use of vacuum polypropylene plastic packaging can inhibit fungal growth during cold storage.

Keywords: Lactic acid bacteria, vacuum packaging, cold storage, mould, cacao

Characterisation of Unfolded Protein Response Gene Expression in Several Rice Varieties under Salinity Stress

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Abstract

Salinity stress is one of factors that inhibits plant growth and crop production by disrupting physiological processes. Salinity can be an elicitor that disrupt the post-translation and induces the accumulation of unfolded protein in Rumen endoplasmic reticulum (ER). ER activated an unfolded protein response (UPR) to restore the homeostasis. Where, the mechanism involves several genes that play role in the induction of transcription factors and chaperone-assisted folding. Rice plants are thought to have certain pattern of gene expression resulting in diversity of tolerance levels. In this research we want to know the relationship between gene expression involved in UPR and the tolerance levels against salinity stress in rice.

Keywords: Endoplasmic reticulum stress, Unfolded protein response, Salinity, Gene expression, rice

Characterization of *Staphylococcus aureus* Isolated from Subclinical Mastitis of Peranakan Ettawa Goat in Pekanbaru

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Abstract

Staphylococcus aureus (*S. aureus*) causing mastitis needs to be identified as the basis of treatment. This study aimed to characterize *S. aureus* isolated from Peranakan Ettawa (PE) goat's milk in Pekanbaru. A total of 50 milk samples were collected from the Farm in Pekanbaru. Based on the cultural and biochemical properties and the amplification of the 23S rRNA, coa, and nuc genes, eight isolates (53.33%) could be identified as *S. aureus*. The characterization of *S. aureus* based on fermenting of Mannitol Salt Agar media, positive for Voges-Proskauer and catalase tests, clotting plasma on coagulase tests. The abilities of *S. aureus* isolates from goats to form β-hemolysis on blood agar plates, agglutinate rabbit blood, compact formed colonies in the Soft Serum Agar (SSA) test, indicates the pathogen of the isolates to host.

Keywords: Peranakan Ettawa goat, subclinical mastitis, *Staphylococcus aureus*

Molecular and Phenotypic Evaluation for Heading Date, Panicle and F2 Selected Aromatic Rice Progenies Derived from Gene Pyramiding Effort

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Abstract

Gene pyramiding is an attempt to combine many favorable genes from many parents into one single genotype. Hybridizations have been made for some superior rice genotypes including Pandanwangi (aromatic), PTB33 (brown planthopper resistant), Ciapus (high yield and moderate amylosa content) dan KA (early maturity) and some promising genotypes have been obtained. Thus in order to select the best genotypes among the F2 progenies, both phenotypic and molecular evaluation has to be done. The objective of this study was to select the F2 progenies. These pyramided genotypes were evaluated with IFAP and ESP (fgr), (LP1), RM19414 (Hd3), RM7601 (Hd2), and RM3600 (LP1) for molecular assessment, meanwhile morphoagronomic traits were done to assess their performance. Aromatic trait was detected by 1.7% KOH. Meanwhile heading date and panicle length were measured phenotypically. Data obtained from molecular markers were scanned by visualizing DNA bands and calculating PIC (Polymorphism Information Content). Data from phenotypic markers were averaged and then clustered based on IBPGR (International Board for Plant Genetic Resources) standards. Genotype #131 was supposed to have high yield potential, early maturity, aromatic, moderate amylose content, and resistance to brown planthopper. The selected genotypes will be recommended as promising genotypes and continued as elite breeding lines.

Keywords: Molecular marker, morphoagronomic traits, Rice, Simple Sequence Repeats

Stevia ((*Stevia Rebaudiana* Bertoni)): Biotechnological Approach for Breeding Program

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Abstract

The demand for sweeteners derived from sugar cane continues to increase. In line with this, the awareness of the importance of maintaining health, especially due to obesity and diabetes. Stevia is an alternative as a source of natural sweeteners with a sweetness level of more than 100 times compared to sugar cane and contains low calories. The development of Stevia in Indonesia is lmited by low number of superior variety. A combination of in vitro and mutagenesis breeding has been carried out for the Stevia Breeding program. The effectiveness of using Gamma Ray Irradiation and Ethyl Methanesulfonate to obtain new superior varieties showed that these mutagen improve phenotipic variability. This variation play an important role for next steps for plant breeding program.

Keywords : Stevia, Mutation breeding, Gamma, EMS, Sweetener

Isolation Protocol of Jumbo Phage from Winter Grass Soil

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Abstract

Jumbo phage can isolate with many methodologies and protocols. It will depend on phage species, substrate sources, environment, media, and tools. Each method has positive and negative results among the dependent factor. The research aimed to determine the suitable protocol to isolate the jumbo phage from winter grass soil during winter conditions, on two main protocols, the enrichment protocol and non-enrichment protocol. In Sequent, research was conducted with several steps, that are bacterial isolation, jumbo phage isolation, plaque test in *Escherichia coli* colony, bacterial genus identification, phage test in soil bacteria, protocol evaluation, and phage DNA extraction. Based on the plaque size and plaque total, each protocol did not significantly differ on plaque total among the *E. coli* or each isolated soil bacteria. On the *E. coli* test, the plaque total average was 65 plaque, nor on soil bacteria were 45 plaque emerge on each isolated soil bacteria. The significantly different on each protocol was on the clarity of plaque. Based on visual observation, the plaques with enrichment protocol are clearer. It was showed the isolation of jumbo phage from the winter grass during winter conditions did not depend on the enrichment protocol. It can isolate with standard isolation protocol.

Keywords: Bacteria, Enrichment, Non-enrichment,

Regeneration Rate of Tarabas Rice Callus Induced by Several Concentration of 2,4-D

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Abstract

The Agricultural Research and Development Agency and the West Java Provincial Government are developing new superior varieties with Japonica rice standards, namely the Tarabas variety. The purpose of this study was to determine the rate of callus formation and regeneration of Japonica rice varieties Tarabas and Hwayoung induced by several concentrations of 2,4-D. Callus induction for Tarabas and Hwayoung rice showed that at all concentrations were able to produce the same callus formation rate. Embryogenic callus has characteristics including brittle texture, nodular shape, shiny appearance and yellowish white color. Hwayoung callus rice with 1 ppm 2,4-D had a lower regeneration rate than Tarabas rice with 1 ppm 2,4-D having the highest regeneration ratio of 100%. The response of the two varieties with the lower 2,4-D concentration was able to form green patches and regenerate higher than the higher 2,4-D concentration.

Keywords: callus japonica rice, concentration of 2,4-D

Enhancing Bioactive Sesquiterpenes Production In Aquilaria Filaria Cells Culture

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Abstract

Aquilaria filaria is a tropical forest tree which is able to produce fragrance resin called agarwood. Agarwood is used globally as raw material for perfumery industry. Agarwood scent come from the complex mixture of numerous compounds mainly sesquiterpenes (SQTs). Long term formation of high quality agarwood in Aquilaria plant lead to the development of research in plant biotechnology through plant cells suspension culture to produce agarwood bioactive compounds in vitro. This research aimed to study the production of agarwood bioactive SQTs in A. filaria cells culture. The sucrose concentration range of 5 – 20 g/L was added into culture medium as a carbon sources. Yeast extract in concentration of 0.5 g/L was applied as an elicitor. SBSE (Stir Bar Sorptive Extraction) was employed for SQTs extraction, followed by determination of compound by GC-MS. The result revealed that application of either sucrose or yeast extract solely enhace the emission of fragrant SQTs from A. filaria cells culture. Sesquiterpenes namely guaiene, humulene, jinkohol, acorenone, selinene and cadinene were among SQTs detected from the cells culture. Application of 15 g/L of sucrose into culture medium was shown to be the best concentration for SQTs production. Moreover, the combination of 0.5 g/L of yeast extract and 15 g/L of sucrose giving the maximum amount of SQTs molecules emission. Furthermore, this research unveiled that enhancement emission of specific SQTs was followed by reduction in the production of another SQT type, suggested the specificity of elicitor play roled in the synthesis of agarwood bioactive sesquiterpenes in A. filaria cells culture.

Keywords: agarwood, molecule, yeast extract, sucrose.

Efficient Callus Formation and Regeneration of Rice (Oryza Sativa L.) in Their Epigenetic Regulation

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Abstract

Optimization of the use and development of local rice potential is possible by the application of biotechnology, in particular crop improvement with tissue culture techniques. This research aims to investigate the epigenetically regulated expression of genes by using pigmented and non-pigmented Javanica rice to influence the growth between callus and regeneration through improvement of the overall quality and quantity of biotechnology sector. Mature seeds of 14 Javanica rice varieties were examined through the use of N6 medium in vitro embryogenic callus induction. Such basal media were accompanied by different 2,4-D (0ppm, 2ppm and 3ppm) concentrations. Casamino acid (2g), Myo-ionositol (1ml), sucrose (30 g), gelrite (4 g), kinetin (2mg/ml), and NAA (1mg/ml) were applied to the development of callus until the growth of green spots was complemented with N6 medium. For RNA extraction, this study used the NEXprep™ Plant RNA Mini Kit (NEXT^TM Diagnostics) and OsSERK, OsLEC1 and OsWOX4 expressed during embryogenic induction and development of the somatic embryos through the use of RT- PCR analysis. In conclusion, the highest regeneration frequency showed expressed of OsSERK, OsLEC1 and OsWOX4 for varieties Gogoniti II, MS Pendek and Pandan Ungu and if one of the genes showed low level, then, regeneration frequency will also be effected.

Keywords: Javanica, Plant growth regulators, RT-PCR, Somatic embryogenesis, Tissue culture

β-Glucan from Yeast Cell Wall as Antifungal and Toxin Reducer towards *A. flavus* (AFB1) and *A. ochraceus* (OTA)

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Abstract

Most foods can be spoilage because of fungi that produce mycotoxin. The most common fungi that is often found to contaminate food is the type of *Aspergillus sp*. *Aspergillus flavus* can produce aflatoxin B1 and *Aspergillus ochraceus* can produce ochratoxin A. Commonly, for the preventive way, we used pesticides against that but it caused a negative effect on the environment. New strategies such as natural decontaminant are needful. β-glucan from yeast cell wall can be used as it. β-glucan are known not only inhibits the growth of fungi but also reduce mycotoxin contamination. The complex mechanism of mycotoxin adsorption on yeast cell wall has not well studied and still is not fully understood, however that hydroxyl, ketone, and lactone groups of the mycotoxin are involved in both hydrogen bonds and van der Waals interactions with the hydroxyl groups and rings in glucans. In addition to the amount of β-D-glucans, adsorption is also favored by a more flexible cell wall conformation which differs by yeast strain. This paper explains how β-glucan from yeast cell wall acts as an antifungal against *Aspergillus flavus* and *Aspergillus ochraceus* and toxin reducer against aflatoxin B1 (AFB1) and ochratoxin A (OTA).

Keywords: *Aspergillus sp.*, beta glucan, yeast cell wall, antifungal, toxin reducer

Induction of Oil Palm *In Vitro* Shoot Roots (*Elaeis guineensis*. Jacq) and Their Acclimatization in Mycorrhiza-Enriched Media

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Abstract

Oil palm is a vegetable oil-producing plant (CPO) which provides the largest foreign exchange contribution compared to other crops and is widely used in food, medicine, cosmetic, and energy industries. Tissue culture technology is currently used to produce quality oil palm seeds. Oil palm shoots tend to grow and develop in clumps (groups) *in vitro*. Bipolar nature does not appear in all the shoots produced, so to produce plantlets it is necessary to do induction. This research aimed to obtain the right root induction media. A completely randomized design (CRD) with two factors was used with the first factor being the type of auxin (IAA, IBA, and NAA), and the second was the auxin concentration (0, 0.25, 0.5, and 0.75 ppm). At the eighth week after planting, the variables of root length, number of leaves, and shoot height were not significantly different but was significantly different for the root number. The best root induction media for plantlet formation was the MS base medium with the addition of NAA type auxin at a concentration of 0.75 ppm. The plantlets formed symbiosis with mycorrhiza which was applied at a dose of 4 g per polybag in the fourth month after planting.

Keywords: Auxins, plantlets, bipolar, NAA, *Elaeis guineensis*. Jacq

The Phytochemical And Genetic Diversity Analysis Of Indonesian Black Rice Cultivars Using Microsatellite Markers

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Abstract

Rice (*Oryza sativa* L.) have been divided into two types, according to the color are white rice (around 85%) and pigmented rice (around 15% included red, brown, blackish-purple, and black rice). Black rice is one of the species that has advantages in various fields, such as health. Indonesia has many local accession of black rice which is not characterized yet. The rice domestication caused different agronomic important traits, such us phytochemical content and genetic diversity. This study showed amylose content, phenolic content, and antioxidant activity of fifteen black rice cultivars compared with red and white rice cultivars. The black rice cultivars had 8,50 – 27,74% of amylose content which was characterized into non-glutinous rice. The phenolic content in black rice cultivars was 166 – 371 mg GAE/ gram extract. The antioxidant activity of black rice cultivars showed 2,45 – 6,29 IC_{50} DPPH radical scavenging activity which greater antioxidant compared with red and white rice cultivar. Microsatellite markers using primer RM102, RM154, RM174, RM220, RM224, RM252, and RM557 showed 2 clusters and 4 sub-cluster of 21 rice cultivars in a dendrogram. The genetic distance value of 21 rice cultivar range 0,692 to 0,974.

Keywords: black rice, phytochemical content, microsatellite

Transformation of Modified High Sucrose Tomatoes by Genome Editing (Zip2::Tivi1::Sps)

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Abstract

Genome editing of crop plants is a rapidly advancing technology to improve its quality and productivity. Genome editing promises giant leaps forward in advancing biotechnology, agriculture, and basic research whereby targeted mutations can be introduced into a plant genome in a highly specific manner and with great precision. For the most part, the technology does not incorporate transgenic modifications and is far superior to conventional plant breeding. The recent technique of genome editing by Clustered Regularly Interspaced Short Palindromic Repeats/CRISPR associated 9 (CRISPR/Cas9) has greatly advanced the breeding for crop improvement due to its simplicity and high efficiency over other nucleases such as Zinc Finger Nucleases and Transcription Activator Like Effector Nucleases. CRISPR/Cas9 tool contains a non-specific Cas9 nuclease and a single guide RNA that directs Cas9 to the specific genomic location creating double-strand breaks and subsequent repair process creates insertion or deletion mutations. In this research we bring into focus on the use of CRISPR/Css9 to increase the sucrose level of tomato fruit (*Solanum lycopersycum* L.). The editing strategy including conversion of vacuolar invertase (TIVI) into cell wall invertases (TIVI1), deletion of sucrose-induced repression of translation (SlbZIP1 and SlbZIP2), and generate active sucrose phosphate synthase (SPS). Those construct then introduced into tomato shoots explant by using of transformation protocol with *Agrobacterium* infection. Obtained plantlets then being regenerated. By far, the transformation protocol was currently done at selection stage with the efficiency of 69%.

Keywords : genome editing, CRISPR, transformation, tomato, sucrose

Functional Biomolecules, Recent Potential Biotechnological Applications of The Tempeh Mould Rhizopus. A Short Review

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Abstract

The last 10 years have seen innovative researches worldwide on the potential use of the edible tempeh mould *Rhizopus* for various applications other than for human consumption. This is owing to the fungal ability to utilize various organic substrates alone or in combination with supplemented inorganic compounds to produce valuable biomolecules, as well as to generate other desired nutritional, biochemical, and physical properties. In addition, although the conventional biotechnological method of solid fermentation is still widely in used, other ways of culturing the fungi have also been studied. Thus, beyond their traditional fermenting role in soybean solid fermentation to produce tempeh for human nutrition, fungi from the genus *Rhizopus* have now found their way for potential state-of-the art applications in much wider contexts, namely for animal nutrition, industry, environment, and aquaculture.

Keywords: *Rhizopus*, animal nutrition, enzyme, biosorption, hydrophobicity

The Application Study Of Technology And Analysis Of Feasibility Rice Farming On Rainfall Land In Southeast Sulawesi

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Abstract

The problem of rain-fed lowland rice fields in Southeast Sulawesi is that productivity is still low at an average of 2.8-3 tons per hectare and cropping patterns are generally once a year. The low productivity achieved because the technology applied is still relatively low, among others, not yet using high-quality superior seeds, fertilizer doses far below recommended recommendations, and planting by direct seed scattering, as well as limited water resources. From these problems, a study was carried out aimed at obtaining technological packages of rice farming on rain-fed lowland that can increase production and analyzing the feasibility of introducing technology and existing technology of rice farming on rain-fed lowland. The methodology used is to use a randomized block design (RBD) with 3 treatments. The treatment consists of Package A: How to farmers (control); Package B: Use of VUB + Fertilization of NPK 300 kg and Urea 150 kg / ha + rice straw 2 tons / ha + cropping system for farmers and Package C: Use of VUB + Fertilization of NPK 300 kg and Urea 150 kg / ha + rice straw 2 tons / ha + Legowo planting method 2: 1. Each treatment was repeated 3 times with the area of each repetition was 0.5 hectares. The data obtained were analyzed with variance at the 5% level, the treatment that showed a real difference was followed by further tests of Tukey or Honestly Significant Difference at the 5% level and an analysis of the financial feasibility of the farm. The results obtained show that the production achieved varies greatly, namely for control (Package A) 2.9 tons, (Package B) 3.93 tons and (Package C) 4.43 tons per hectare. From these results, with the price of dry grain harvest of IDR 4000 / kg, the biggest revenue obtained for technology (Package C) is IDR 17,720,000 per hectare and after deducting the costs incurred a profit of IDR. 9,793,000 per hectare.

Keywords: Rain-fed lowland, technology introduction and feasibility of rice farming

The effects of Seaweed-based Coating Application on The Respiration Rate of Shallots (*Allium cepa* L) During Storage

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Abstract

In the postharvest handling of fresh products, coating is known as one of the preservation methods to lengthen shelf life. However, coating materials are still very difficult to find in Indonesia, more researches are still needed to explore indigenous materials to produce coating material. This research was intended to develop coating material based on seaweed flour (carrageenan) and to study the effect of its application on the respiration rate of shallot (*Allium cepa* L) during storage period. Coating material was produced in two different concentrations of carrageenan that were 0,5 and 0,75%. Fresh shallots as the samples were coated then loaded in the respirometer and stored at temperatures of 15ºC and 28ºC for 15 days storage periods. Uncoated shallots were also investigated as the control. Oxygen and carbon dioxide changes were monitored using O_2 and CO_2 Gas Analyzer (Quantek 902D) every day. It was found that the changes in gas composition inside the respirometer were found to vary for each coating concentration and storage temperatures. Coated shallots showed lower respiration rates as compared to the control. Arrhenius equation could satisfactorily represent the effect of storage temperature on the respiration rate of the shallots.

Keywords: shallot, coating, respiration rate, storage, temperature

The Effect of Application Times and Temperatures of Hydro-precooling on The Respiration Rate of Cayenne Pepper (*Capsicum annuum 'Bird's Eye'*)

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Abstract

Hydro-precooling is known as one of the methods to preserve quality during storage period of agricultural products. Punctuality of the application and temperature of precooling water have pronounced effect of the respiration rate of agricultural products. This research was intended to study the effect of application times and temperatures of hydro-precooling process on the respiration rate of cayenne pepper (*Capsicum annuum 'Bird's Eye')* during storage period. Three different application times, just at harvest, 12 and 24 hours after harvest and three water temperatures of 5, 10, and 15ºC were studied in completely randomized design with three replications. Chili samples were hydro-precooled by immersion method then loaded in the respirometer and stored in a cold storage at the same temperature as precooled water temperatures. Oxygen and carbon dioxide changes were monitored using O_2 and CO_2 Gas Analyzer (Quantek 902D) every day for 21 days of storage period. It was found that storage time, precooling application time, water temperature, and their interaction significantly influenced respiration rate of the samples. However, respiratory quotient was only influenced by storage time and water temperature ($p<0.05$). Treatment combination of precooling application just at harvest and water temperature of 10ºC resulted in the lowest respiration rate.

Keywords: chilli, respiration rate, precooling, storage, temperature

The Effect Of Different Time Durations Of Ozone Treatment And Storage Temperatures On Postharvest Quality Of Banana (*Musa Acuminata*)

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Abstract

As a climacteric fruit, bananas continue to ripen after being harvested and it's accelerated by ethylene produced by the product. The rate of the ripening process greatly influences shelf life and commercial value. Ozone treatment and storage temperature potentially inhibit ethylene production and may lengthen shelf life. The purpose of this study was to observe the effect of different time durations of ozone treatment and storage room temperatures on the changes of firmness, weight loss, colour attributes of chroma, and hue angle on bananas. Green mature kepok bananas (Musa acuminata) were used as the sample. The time duration of ozone exposure treatments used were 0 (untreated), 10, 15, and 20 minutes. While the storage temperatures used were 5, 15, and 27°C (ambient temperature). The physical qualities of the samples were measured every day for three weeks of storage. Repeated measure of statistical analysis indicated that time and its interaction with duration of ozone treatments and storage temperatures were found to have a significant effect on firmness, weight loss, chroma, and hue angle. It was found that roughly the duration of ozone treatment of 15 minutes with 15°C of storage temperature had better quality preservation than the others.

Keywords: banana, ethylene, ozone, quality, temperature

Impact of climate change on the spring flows affecting livelihoods in Himalayan hills of Uttrakhand region of India

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Abstract

The water springs being major source of fresh water are lifeline of hilly regions. All livelihood activities including agriculture and tourism largely depend upon water availability from the springs in different seasons. Climatic change, such as increase in rainfall intensity and reduction in winter rain, could be reasons for the decrease in spring discharge (Rawat et al 2011). Study on natural spring flow is of prime importance and it is back bone of all agricultural, social and financial activities of the local habitats. The study reveals impact of extreme weather conditions due to climate change scenario on spring flow patterns and water yield from the springs in different seasons. Eight no. of springs out of 33 active springs located in the watersheds Chandrabhaga and Danda in Himalayan region of India were selected for this analysis. The results indicated undesirable impacts of high intensity rainfall events on the springs in terms of torrential flows for short duration combined with very lean flows in remaining period. The study revealed that subsurface water regime in and around recharge zone of these springs is disturbed due to disturbance in precipitation pattern because of climate change reverberations in the area.

Keywords: Springs, Spring-flow, Climate change.

Using Design Expert D-Optimal for Formula Optimization of Functional Drink that Enriched with Moringa Leaf Extract *(Moringa oleifera)*

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Abstract

The nutritional content found in Moringa leaf can be used as a supporting substance The utilization of Moringa leaf extract as for the enrichment of food products that are ready for consumption such as instant drink products. The use of Moringa leaf extract as an instant drink is an innovation of a local food product to help young woman that are already menstruating overcome iron deficiency anemia. The purpose of this study was to determine the optimization of the instant drink formula enriched with Moringa leaf extract using the Expert D-Optimal Design. The research stages were carried out using: (1) Preparation of the Moringa leaf extract, (2) determination of the fillers from cassava flour, mocaf flour, and dextrins, (3) characterization of the instant drinks with selected fillers, (4) Moringa leaf enriched instant drink formula optimization using the Design Expert program 12 the Mixture Design method. The results of the study based on the prediction of the Design Expert 12 program show that the optimized formula has a water soluble time of 17.54 seconds; water insoluble part 0.002%; yield 61.15%; bulk density 0.72 g / mL; 64.65 degrees of brightness; water content 1.32%; ash content 0.27%; pH 3.22; antioxidant activity 0.00027; tannin content 0.074%; iron content 3.47 µg / mL and organoleptic values include color 4.15; aroma 3.99; taste 3.94; and overall 4.02. Then, the obtained desirability value is 0,489.

Keywords: Moringa Leaf, Design Expert, Instant Drink, Formula Optimalization.

Extrinsic Motivation Underlying Traditional Agricultural Techniques for Coastal and Small Islands Communities in Southeast Sulawesi

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Abstract

The community at coastal areas and small islands in Southeast Sulawesi held the traditional farming. The farming is carried out in a rainfall system on sub-optimal land with low theoretical productivity. Although, farmers continue to the farming activities because they have extrinsically motivation that affects their farming techniques. This technique can increase their farm productivity relatively. The study aims to find and explain the extrinsic motivation underlying in the traditional farming techniques of coastal and small island communities. The research took a case study location in the Binongko Islands, Wakatobi Regency, South east Sulawesi Province. The research was conducted from June 2019 to February 2020. Data were collected through observation, interviews and literature study through the triangulation method. The results showed that the extrinsic motivations underlying the community's traditional farming techniques were (1) obtaining social rights; (2) obtaining agricultural products economically, socially and ecologically; and (3) support from the government. This motivation has encouraged farmers to apply local wisdom techniques with mixed farming systems on more than one farm.

Keywords: Agricultural, Extrinsic, Island, Motivation, Techniques

Utilization Of Peanut Skin (*Arachis hypogea*) And Bio-Slurry As Organic Fertilizer To The Growth And Production Of Sweet Corn (*Zea mays*)

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Abstract

The increasing demand for sweet corn (*Zea mays*, L.) in order to meet community nutrition has encouraged farmers to make improvements to the cultivation system. One of the important factors in the process of increasing sweet corn production is soil nutrients. Peanut skin (*Arachys hypogea*. L.) and bio-slurry are organic waste, when they have undergone a decomposition process they can be used as organic fertilizers. The aim of the study was to test the correct dosage of peanut shells and the concentration of bio-slurry so that it could be used as organic fertilizer for sweet corn plants. The research was conducted in the experimental garden of the Faculty of Agriculture and Animal Husbandry, University of Muhammadiyah Malang from March to May 2020. It is a factorial experiment arranged in randomized groups, the first factor is peanut skin dose: P_1 = 10 tons / ha; P_2 = 15 ton / ha; P_3 = 20 ton / ha. The second factor is the bio-slurry dose: B_1 = 1.0 l / m2; B_2 = 1.5 l / m2; B_3 = 2 l / m2. The results showed that there was an interaction between the peanut skin dosage treatment and the bio-slurry dose on the growth and yield of sweet corn. Dose treatment of peanut shells on growth and yield variables of sweet corn is influenced by the dose of bio-slurry. A combination of suitable treatment for growth and yield to sweet corn is peanut skin 15 ton / ha and bio-slurry 1.5 l / m2

Keywords: bio-slurry, organic fertilizer, peanut skin, waste.

Inhibition Of Orange (*Citrus reticulata* Blanco) Green Mold With Anti-Fungal Yeast *Aureobasidium pullulans* And *Debaryomyces hansenii*

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Abstract

Green mold rot disease is one of the main diseases in postharvest citrus fruits. The attack of this disease quickly causes a decrease in the quality and shelf life of citrus fruits during storage. Post-harvest handling of citrus fruit from green mold attack is generally by coating the fruit using synthetic fungicides so that the fungicide residue often sticks to the orange peel when marketed. Fruit coating is one of the methods used to extend shelf life and maintain the quality of fruit stored at room temperature. The coating of the fruit with natural ingredients is still little researched, especially those made from yeast. The aim of this study was to determine the effectiveness of postharvest citrus fruit coating with antagonistic yeasts at various levels of maturity against the level of green mold attack, quality and shelf life of citrus fruits. The results showed that coating the fruit with yeast *Aureobasidium pullulans* and *Debaryomyces hansenii* was able to maintain fruit quality, increase fruit shelf life, and increase the resistance of citrus fruits to postharvest disease pathogens without reducing the quality of the fruit.

Keywords: biological control, postharvest disease, Penicillium, citrus

Development of Controlled Drip Irrigation with Lock Time System

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Abstract

The utilization of controlled systems in drip irrigation can increase land productivity and can minimize water usage in the dry season. This irrigation system can reduce water loss and can increase the effectiveness and efficiency of agricultural activity. The purposes of this study were to develop and analyze the ability of controlled drip irrigation with lock time system for watering crops on time and according to the needs. The research method was research and development (R & D) method, starting from designing a control system, prototyping, functional testing, field testing, and data analysis. Based on the test results, the controlled drip irrigation system that had been developed had high time accuracy, with an error percentage of 0.9%. The response of the solenoid valve function had high sensitivity, with an R^2 value of 0.99%. This system had high spray consistency with an average spraying error rate of 1.3 ml per emitter. Based on these results, it can be concluded that the controlled drip irrigation device with a lock time system that had been developed can function properly and is suitable for watering crops on time and according to crop needs.

Keywords: drip irrigation, microcontroller, DS3231 module, efficiency, lock time.

A Database for Asian Local Perennial Herbs Leaf Images in Natural Environment

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Abstract.

Although great number of researchers have shown considerable interest in Asian medicinal plants recognition, the problems still persist especially when recognizing in natural environment, where the acquisition process is affected by various environmental factors. In this paper, we propose a dataset that consists of 22800 leaf images of eight high medicinal value plants, namely Plectranthus amboinicus (Mexican mint), Andrographis paniculata (Green chiretta), Persicaria minor (Small water-pepper), Centella asiatica (Asiatic pennywort), Gynura procumbens (Longevity spinach), Gynura pseudochina (Chinese Gyunera), Hydrocotyle javanica (Java pennywort) and Orthosiphon aristatus (Java Tea). The images were captured in natural environment with varying degree of qualities in terms of distance from the camera, ambient illumination and pose variations, enabling larger interclass and intraclass variability. The database is made available to research and public community through https://8rrtocpfej9haz6zjz1znq-on.drv.tw/www.beta.com/LVALPH.html, which may create abundant opportunities for researchers to investigate on classifiers that best suited for automatic medicinal plants recognition in natural environment.

Keywords: Classification, leaf identification, medicinal plants, perennial herbs, plant database.

Efficient Farming Operation Management in Tropical Greenhouses: A Review

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Abstract

The technology for greenhouse farming has evolved from simple rows of open-top crops to sophisticated controlled environmental agriculture (CEA) operation where environmental parameters, namely light level, air temperature, relative humidity (RH) and CO^2 concentration, as well as the amount of water and nutrients supplied to plants are monitored through a variety of sensors and Internet of things (IoT) platforms, and controlled with actuators using precision microcontrollers. The utilization of IoT and machine learning technologies have gain great attention due to the potential of providing highly advanced automation for achieving efficient resource management, optimizing plant growth and increasing high yields. Nevertheless, automation in a tropical greenhouse is a challenging task due to the climate in this region and also due to environmental effect caused by the commonly used low expense shading materials in tropical region that protect plants from heavy seasonal rains, winds, hails and pests. The motivation for preparing a comprehensive review is inspired by these facts. In this paper, various related technologies of intelligent and IoT based automation for greenhouse farming in tropical climate areas are reviewed, including sensor types, control algorithms, and network communication protocols, and the relationship between them and their advantages and disadvantages are discussed.

Keywords: IoT platform, machine learning, greenhouse farming

Does landslide Argopuro-Hyang Mountain recur?

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Abstract

Landslide was a specific process that soil pore in the solum with a slope > 27% above impermeable material saturated and causes liquefaction processes above the bedding plane. The purposes of these research were to characterize landslides events on the southern slopes of the Argopuro-Hyang Mountains on 298 landslide point during the 2011-2019 using Google-Earth Orthophoto. The result showed that the number landslides >100 points occurred in 2019, 2011, 2017, 2018 and 2014 with 211, 174, 167, 140 and 113 points respectively. By the month, landslides event mostly occurred on September, June and March. Related to the frequency of repeating, there are three definitions i.e. active, dormant and reactive landslide. There were 211 active landslide points in 2019, 268 points were reactivated, and 36 points were dormant. The reactivation landslide on 1-7 years interval following the equation $y = 6.55x^2-75.76x+207.46$ ($R^2 = 0.84$). The landslide points that experienced reactivation for 1, 2, 3, and more than 4 years were 170 (63.4%), 38 (14.2%), 36 (13.4%), and 24 (9.0%) respectively. The high potential for landslide reactivation in the following year has implications for the obligation of stakeholders to reduce the level of disaster risk for people living in landslide prone areas.

Keywords : Vulnerability, Landslide-Prone Region, Hydrometeorology, Reactivation, and Disaster Risk Management

Water Balance Assessment in Mayang Watershed

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Abstract

The Mayang Watershed is one of the watersheds in the Jember Regency. It receives a mean annual rainfall of 2162 mm in 20 years. This watershed is prone to hydrological disasters. The Mayang watershed has the potential for flooding during the rainy season and drought during the dry season. Based on these problems, the Mayang watershed water balance needs to be studied further. This study aims to assess the availability of water resources in the Mayang watershed by investigating the important hydrological components and estimating the water balance of the Mayang watershed using the Water Evaluation and Planning (WEAP) model. The availability of water comes from rainfall. Water demand is based on water demand for irrigation, domestic, urban, industrial, and livestock. The unit of time to calculate the water balance is ten days. In one month it is divided into three periods. WEAP modeling is based on current water requirements. The results showed that in May II to December II could not be fulfilled. The peak in October I, the water demand of all demand sites that can only be fulfilled, amounting to 74.92%. The highest unmet volume demand is 0.67 million m3. Meanwhile, in December III in May II, the Mayang watershed was able to meet the water demand at all demand sites up to 100%.

Keywords: Supply, water demand, water balance, Mayang watershed, WEAP

The Utilization of Cocoa Pod Husk Infested by Cocoa Pod Borer at Various Levels Attack into Bioethanol

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Abstract

Cocoa pod borer is a major pest in cocoa cultivation. Cocoa pods that are attacked by the pod borer pest can no longer be used in chocolate production. One of the alternatives for utilizing this waste is to make bioethanol. The raw material used in the manufacture of bioethanol is cocoa pod husk. Healthy cocoa pod husk contain 27% of crude fiber has potential to be converted into bioethanol. Cocoa pod husk to be converted into bioethanol had to pass some procresses consist of hydrolysis and fermentation. This research was intended to identify : the charateristics of cocoa pod husk infeted by cocoa pod borer at various levels attack, the optimal hydrolysis treatment, and the compotition of alcohol produced from fermentation. The research showed that the higher rate of cocoa pod borer infestation may reduce chemical compounds in cocoa pod husk. The optimal treatment of chemical hydrolysis was 2 M HCl in 8 minutes in autoclave and 1% enzymes at 50 ^{o}C in 5 hours was the optimal treatment for enzymatic hydrolysis. The higher rate of cocoa pod borer infestation tend to reduce alcohol production. The alcohol produced from the fermentation process of the cocoa pod husk was methanol and ethanol. The average of methanols yield was 0,5% and the average of ethanols yield was 0,3%. Every 100g of cocoa pod husk infested by cocoa pod borer produced 1,37 (w/w) bioethanol.

Keywords: covertion, methanol**,** ethanol, cocoa pod borer infested

Improved Quality of White Bread from Cassava Flour (gluten free)

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Abstract

The production of white bread made from cassava cannot be accepted by consumers, because it has a hard texture , crispy, crumble, has low elasticity, self life and the taste that consumers are less interested in, it is necessary to a new innovation so white bread made of cassava (gluten free) accepted by consumers. The research objective is to improve the quality of bakery products (white bread) made from cassava flour. Replaced the use of wheat flour with cassava flour up to 100%. The research was carried out in three stages, the first stage is the production of cassava flour. The second stage was the production of improver dioscorea, dahlia tubers and yam which then characterize physical, chemical, RVA, and SEM propertie. The third stage is the application of improver to bakery products. Based on the characteristics, the addition of improver (B1) of pachyrhizus erosus flour 3% in making white bread made from cassava can improve the resulting bread with a soft texture (119.18 ± 1.09 g / 10 mm), expande power (126, 67 ± 0.24%). Based on the effectiveness test, B1 treatment has the highest effectiveness with a value of 1.

Keywords: cassava flour, gluten free, white bread, Pachyrhizus erosus, dioscorea

Magnetic Field Exposure Affects Plant-Parasitic Nematode *Meloidogyne* Spp. Motion Behavior

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Abstract

Plant-parasitic nematodes are costly burdens of crop production. Ubiquitous in nature, phytoparasitic nematodes are associated with nearly every important agricultural crop and represent a significant constraint on global food security. This study aimed to determine the effect of magnetic field exposure on plant-parasitic nematodes, namely *Meloidogyne* sp. This research was carried out in October 2019 in the laboratory of agriculture, University of Jember. The study used a completely randomized design using four treatments, namely exposure to the N polar magnetic field, S polar magnetic field, toroidal magnetic field (N to S), and reverse toroidal magnetic field (S to N) with a magnetic strength of 1,5 Mt and the number of nematodes was 50 J2 per treatment. The results showed that the magnetic field affects the nematode's motion, which is increasingly greening the magnetic field within 60 seconds and 120 seconds. Nematodes experience the most rapid movement and move further away from the magnetic field within 60 seconds and 120 seconds in the treatment of reverse toroidal magnetic field exposure (S to N) equal to 13 mm and 24.5 mm. Hereby, this study provides new information about changes in nematode motion to exposure to magnetic fields.

Keywords: exposure; magnetic field; *Meloidogyne*; movement; plant-parasitic nematode

The Effect Of Alkaline-Autoclaving Delignification On Chemical Component Changes Of Sugarcane Trash

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Abstract

Sugarcane trash (ST) is lignocellulosic biomass that available abundantly during the sugarcane is harvested as side product of sugarcane plantation. Several research groups have already reported their ST delignification, but there is still need to find a suitable delignification technique for improving recovery of cellulose and eliminate lignin and hemicellulose from complex structure of ST. Hence, the research aim is to investigate the effect of alkaline-autoclaving delignification method on chemical component changes of ST. The different sample of ST including washing process, no washing process and microwave assisted maleic acid pretreatment prior to delignification process with 2% NaOH combine with autoclaving in 121°C temperature was used in this study. The chemical composition changes in pretreated solid fractions and reducing sugar in pretreated liquid were analyzed. The functional properties were also analyzed using Fourier Transform Infrared (FTIR). The results showed that microwave assisted maleic acid pretreatment prior to delignification was the effective treatment in this study to eliminate lignin dan cellulose recovery than that other treatment. In addition the reducing sugar obtained from microwave assisted maleic acid pretreatment 3.2 times and 3.6 times higher than that no washing treatment and washing treatment, respectively.

Keywords: alkaline-autoclaving, delignification, microwave assisted maleic acid, sugarcane trash

Properties and Reclassification of Volcanic Soil in Sungai Kamuyang Village, West Sumatra

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Abstract

This study was aimed to examine the classification of soil in Nagari Sungai Kamuyang, West Sumatra, Indonesia by the USDA Soil Taxonomy up to the level of family. This research was conducted in Sungai Kamuyang, Limapuluh Kota Regency, West Sumatra-Indonesia, Laboratory of Soil Science Andalas University, and Laboratory of Soil Chemistry and Laboratory of Soil Mineralogy of Soil Research Center, Bogor. This research used a surveiy method with several stages: Preparation, Pre-Survey, Main Survey, Soil Analysis, and Data Processing. Based on the results on the research of soil classification in Nagari Sungai Kamuyang, found differences in the results in classification of Soil in Sungai Kamuyang served Land Unit Map Sheet Solok by Soil and Agroclimate Research Center in 1990, which is only on the profile SL3 showing characteristics of Andisols while on the other profiles show Inceptisols chararacteristics. The results of soil classification based on the USDA Soil Taxonomy System, on SL1, SL2, SL4, SL5, SL6, and SL7 profiles were classified into Ordo: Inceptisols, Sub Ordo: Udepts, Greatgroup: Dystrudepts, Sub Group: Andic Dystrudepts, Family: Fine silt, Kaolinit, Isohypertemic, Andic Dystrudepts. SL3 profiles was classified into Ordo: Andisols, Sub Ordo: Udands, Great Group: Hapludands, Family: Medial, Amorphic, Isohypertermic, Typic Hapludands.

Keywords: Soil classification, USDA Soil Taxonomy System, Volcanic soil, Sungai Kamuyang.

Physical Quality Changes Of Dehydrated Strawberry Affected By Different Packaging In Tropical Environment

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Abstract.

Processed fruit strawberry such as dehydrated fruit was important as alternative ways to increase shelf-life and valued of the fresh fruit. However, unfavorable effects of tropical environment can accelerate the deterioration quality of processed fruit . Applied packaging to protect the processed fruit was an important way to maintain the quality and increasing the shelf- life of the fruit. Objective of the study want to know the effects different packaging treatments for reduce unfavorable tropical environment conditions of dehydrated strawberry fruit. Dehydrated strawberry fruit were packaged using Polyethylene plastic with nylon for three treatments that stored in the ambient tropical temperature condition. Firstly, dehydrated fruit packaged conventionally using polyethylene plastics packaging without vaccum and secondly dehydrated fruit packaged conventionally using polyethylene plastics packaging with vacuum treatment. Then third, dehydrated fruit without packaging as a control. Physical parameter were analysed using standard method texture and color of food. Based on the result, we found that vaccum packaging with can be maintained the color changes and texture of dehydrated strawberry fruit compare with those of conventional packaging and control. However, detailed changes in quality and different thickness of polyethylene packaging were need to be considered for future research..

Keywords: Color, Dehydrated Strawberry fruit, Polyethylene packaging, Quality, Texture

Phytopatological Compatibility of Sunflower (Helianthus annuus L.) Var. IPB Bm 1 as Refugia

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Abstract

Refugia has been used to avoid insect pests in the leguminous plant. However, utilization of refugia never been evaluated at the level of sensitivity to primary plant disease. The research aimed to find out the compatibility of Sunflower Var IPB Bm 1 as refugia due to primary plant pathogen. It affected the stem rot disease on the most crop, caused by the fungal pathogen, Sclerotium rolfsii. The Research conducted in the in-vitro level. The sunflower seed tested on the S. rolfsii colony by used two different media, planted by 7 mm from the outer colony of fungal. The infection ability, time requirement of infection, sclerotia size, and developing time of sclerotia used as observation subject and compared to the control. Based on the result, compared due to the control treatment, the infection time requirement of the fungal pathogen to infected sunflower are six hours slower than control, have a bigger sclerotia size, more than 47,680 µm2 bigger and faster-developed sclerotia. The development stage from hyphae to the well-developed sclerotia in Sunflower seeds are 7,1 days faster than the control treatment. The result indicated the S.rolfsii could develop well to the dormancy stage on the Sunflower IPB bm 1 more faster than the control treatment.

Keywords: Helianthus annuus L., Refugia and S.rolfsii.

Effect Of Different Amount Crosslinker And Catalyst On Modified Cassava Towards Its Chemical Characteristic

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Abstract

The experimental works involved the preparing of modified cassava using crosslinker sodium trimethyl phosphate (STMP) and catalyst (sodium chloride) towards its chemical characteristic. In this study, the number of crosslinker and catalyst were varied to determine the effect of each amount of crosslinker and catalyst towards the value of solubility, swelling power, freeze thaw and proximate analysis. Their structural and functional properties were also characterized through Fourier Transform Infrared (FTIR). This study found that the properties of modified cassava containing 2% (w/w) of catalyst was less effective than modified cassava comprised of 4% (w/w) sodium chloride, and 4% (w/w) content of crosslinker in modified of cassava was the best amount of STMP to be used in this process. formulating abstract and 10 mm after the abstract.

Keywords: cassava, catalyst, crosslinker, swelling power, solubility

The Rate Of Decomposition Of Pineapple Peel Waste By Earthworms (*Lumbricus Rubellus,* Hoff.) At Different Doses And Water Content

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Abstract.

The presence of earthworms can be used as an indicator of fertility or soil quality. Its ability to decompose organic waste is very high. On the other hand, the organic waste generated by various human activities is enormous and continuous, including vegetable and fruit waste. In particular, pineapple peel waste which is a tropical fruit in traditional markets continues to be abundant and often becomes an environmental problem. The purpose of this study was to evaluate the rate of decomposition of pineapple peel waste by earthworms (*Lumbricus rubellus,* Hoff.) based on different doses and water content. The research was conducted at the Biological Conservation Laboratory, University of Jember. Pineapple peel waste was taken from traditional markets in the city of Jember. Combination treatment between pineapple peel waste water content (dry and fresh) and addition of pineapple peel waste per week as much as 140 g / week and 280 g / week. The soil medium used was 1500 g and inoculated earthworms with biomass 20 (± 0.53) grams at the beginning of the treatment. The evaluation of decomposition rate was based on soil organic C content and was evaluated weekly for 5 weeks. The results showed that the dried pineapple peel waste obtained a faster decomposition rate than the wet condition (fresh). The highest average speed in the treatment of pineapple peel waste with drying and weekly additions of 140 g / week was 86.76% per week and the lowest was in the combination treatment of wet pineapple waste (fresh) and weekly addition of 28 g / week of 63.17% per week. The decomposition rate at the beginning of incubation or the highest first week was followed by a decrease in speed based on the time of incubation.

Keywords: earthworm, decomposition, pineapple peel waste.

Targeting Intensive Farming System In The Mountainous Area In Central Java Indonesia To Change and Its Constraints.

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Abstract

The study aims to identify intensive farming system characteristics in the mountainous who potentially creates land degradation and their possible constraints to change in order to reduce their erosive practiced. Criteria for typology were: (i) the households social and economic characteristics, (ii) the farmers' livelihood assets, (iii) the relative importance of off-farm and on-farm activities, including livestock (iv) the cropping systems present in the farm, and (v) farmers constraints in their current activities. One hundred and eighty farmers were selected randomly in equal proportions in the three subzones of three sub watersheds. First results identified: (1st)Capital Short(CS); (2nd)Uplanders Farming (UpFar); (3rd)Diversified Production (DivPro); (4th)Off-farm Activities (Off-Act); (5th)Livetosck Farmer(LivFar). The second is two constraint in the field were labor and water resources. Labor balances were significantly different among farm types. For each farm type, we found that some farmers face labor shortage. However we found that farms which have large numbers of senior members mostly in UpFar and DivPro have higher negative labor balance. Increasing area of grass fodder in plots of CS, UpFar, and DivPro without improving accessibility to reasonably priced water may face high hindrance

Keywords: Typology, Intensive Farming System, contraints, practice Changed.

Effect of Land Criticality on Nutrient Availability (Case Study of Dinoyo Sub Watershed, Jember Regency, Indonesia)

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Abstract

Dinoyo sub-watershed is one of the watersheds that drain water from Argopuro Mountain through the Panti and Rambipuji Districts. Land-use changes in the upstream area have reduced the function of water absorption and increased soil erosion. It causes drought during the dry season and flooding during the rainy season which is a characteristic of critical land. This study aims to map the level of criticality of the Dinoyo sub-watershed area and its relationship to nutrient availability. This study used the scoring and weighting method of four main factors that affect the critical value of land (land cover, slope, management, and erosion level). The layers then executed using the Gis program. The result of this analysis produces a land criticality map. Based on the analysis, the up-stream section has high nutrient availability compared to the middle and downstream regions. There are two classes of land criticality, which are rather critical and substantial criticism. The area included in the rather critical was 1,723.34 ha dominated by forest land use. A coffee plantation dominates a sizeable critical area of 2,333.88 ha. From regression analysis showed that organic matter had the most influence on the criticality of land.

Keywords: erosion, land criticality, nutrient availability

Classification Cherry's Coffee using k-Nearest Neighbor (KNN) and Artificial Neural Network (ANN)

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Abstract

After harvesting cherrys coffee farmers still use the conventional way of choosing coffee cherrys that are suitable for harvest. This makes it very difficult for farmers because the coffee plantations are planted in the mountains, the constraint is not only the difficulty of water but also the availability of containers that must be able to load a lot. This makes it very difficult for farmers if the dry season comes. In this study, proposing the use of IT to solve problems with energy saving. This way used machine learning for classification. It is hoped that this method can save energy and facilitate coffee farmers. The main goal is the results of this study can prove that the results of a computer cherry coffee classification analysis results are the same as the classification done using the human eye that has been done. This paper used elements of 3 (three) indicators to 17 (seventeen) elements of the assessment indicators. The method used for texture recognition is the Gray Level Co-occurrence Matrix (GLCM) method.The Artificial Neural Network (ANN) and k-Nearest Neighbor (k-NN) algorithm was used in this study. The result of classification using ANN accuracy 24,41% and using KNN accuracy 72,12 %.

Keywords: machine learning, RGB, GLCM, KNN, ANN, classification, cherry's coffee, image processing

Identification Farming System Impact on Erosion Yield Using RUSLE Method at Kemuning Watershed, Jember, East Java

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Abstract

Population growth has led to an increase in human consumption which leads to the development of agricultural systems, both by intensification and extensification. This condition also happened in the Kemuning sub-watershed. The purpose of this study was to determine the erosion yield using the RUSLE method at the farming level. The soil erodibility (K), slope length and slope (LS), crop management and soil conservation measures (CP) were obtained from measurements in the field on plot sample, while the erosivity value (R) was obtained from rainfall data. The sample plots of agricultural land were chosen purposively based on the cropping pattern and conservation practiced in the study area. The land use for the agricultural system based on the land use map is 429.93 ha (21.39%). The results of erosion yield in 1st, 2nd, and 3rd parts are 511.50; 4344.17; and 229.68 ton/ha/year respectively. The level of erosion hazard (LEH) in the Kemuning Sub-watershed is dominated by the very severe category in the 1st and 2nd parts, while the 3rd is in a severe category. The factors that most influence the erosion yield in the study area are the LS and CP values. Recommendations for reducing LEH erosion are by increasing conservations practiced for example terracing.

Keywords: Erosion yield, erosion hazard lever, farming system, RUSLE

Water Availability Analysis at Sampean Baru Irrigated Area to Support Food Security

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Abstract

Sampean Baru Irrigation Network is an irrigation network under the authority of the central government because it has a cross-regency irrigation network, the upstream is in Bondowoso Regency and the downstream is in Situbondo Regency, with an irrigated area (IA) 2.243 ha. This study aims to determine the potential for increasing the planting index (PI) of Sampean Baru I.A. Research steps were, 1st identification current PI, 2nd identification water supply availability, 3rd calculating crop water requirement (CRW) based on scenarios of maximum PI of (1) oldemen's climate classification, (2) planning of cropping pattern in sampean IA; 4th analysis of water supply status to support agricultural system in Sampean I.A. The results show that the current cropping index is only 293% (unproductive); oldemen climate classification (C3 category) suggests study area have once paddy and twice secondary crops (polowijo) in a year. However, Sampean Baru I.A. has a discharge of 1,876 Liter/second, and water excess is 1,085 liters/second (based on CRW analysis). The suggestion to support food security is increasing the PI to 300% and converting the cropping pattern to paddy-paddy-palawija.

Keywords: Cropping Indeks, crop water requirement, water supply availability, Sampean Baru irrigated area

Prospect of Tilapia Cultivation Business Development in Daerah Istimewa Yogyakarta Province

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Abstract

Research on the prospect of developing tilapia aquaculture in Daerah Istimewa Yogyakarta Province by looking at the gap between the demand and availability of tilapia. This research was aim to know how big the demand factors affect the amount of tilapia demand and how big the elasticity of tilapia price in DIY. This study aims to determine how much the influence of the demand factor on the demand for tilapia and the level of elasticity of the price of tilapia in the Province of DIY. The basic research method used is descriptive analytic. The research location was chosen purposively (intentionally) in the Province of DIY. The data collected is secondary data in series for 10 years. Methods of data analysis using the OLS (*Ordinary Least Square*) method using SPSS. Based on the results of statistical analysis, it shows that the best tilapia demand model in DIY is influenced by 2 variables, namely income and rice price. The income and price of rice have a significant effect on the 90% confidence level. The result of elasticity tilapia price showed that the character of tilapia was inelastic because coefficients of elasticity (Ep < 1) that -0,504. It meant that the changed in tilapia price was not sensitive to change the number of demands.

Keywords : elasticity, tilapia demand

The Study of Subclinical Mastitis Prevalence in Lactating Dairy Cow in Banyuwangi Regency, Indonesia

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Abstract

Mastitis is one of the overwhelming diseases in the dairy cow industry because it has reduced milk yield and quality and increased cows' culling rate. This study was carried out to establish the prevalence of subclinical mastitis in the lactating dairy cow in Banyuwangi regency, East Java, Indonesia. Forty-nine milk samples from 13 head dairy cows were tested for subclinical mastitis using the California Mastitis Test (CMT). The descriptive statistics were performed, and the association between the milking method and mastitis prevalence was also analyzed using GLM. The result shows that subclinical mastitis prevalence was 69.39%, and 30.61% has a negative result. Two different milking methods show significantly different (P-value = 0.000695) in the prevalence of SCM, which is milking using machines had a lower prevalence of mastitis than using hands. Based on this result, we conclude that mastitis in Banyuwangi is relatively high.

Keywords: SCM, milking method, CMT

Marketing Strategy Of Traditional Herbal Drink Based On Consumen Perspective Value

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Abstract

The Covid 19 pandemic has made herbal-based products in great demand by consumers. A community business group in the Meru Betiri National Park, Jember, East Java processes the potential of family medicinal herbs such as ginger (Zingiber officinale), turmeric (Curcuma domestica Val.) and Javanese chili (Piper retrofractum) into herbal drinks. To improve the marketing of herbal beverage products, information on segmentation, positioning and formulation of product development strategies is needed in order to improve the community's economy. The study used a descriptive marketing mix method, SWOT (Strength, Weakness, Opportunity, Threats) and QSPM (Quantitative strategic planning matrix) to assess consumers' perspectives on herbal beverage products with convenience sampling method. The results showed that the market segmentation of traditional herbal drink products with the brand "Kraton" was based on geographic and consumer demographics with the target market for elderly consumer products requiring alternative medicine. Traditional beverage brands that need to be built are herbal beverage products "100% Natural, No Preservatives and No artificial sweeteners". The strategy for marketing of herbal drink are strengthening sales promotions with a total attractiveness score of 6.36; consistency of product quality and business sustainability with a total attractiveness score of 6.25 and strengthening of partnerships with a total attractiveness score of 6.14.

Keywords: marketing strategy, Meru Betiri National Park, tradisional herbal drink.

Measuring The Competitiveness Of Cassava In East Java, Indonesia: Evidence In Jember Regency

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Abstract

The development of cassava is vitally important in the effort to supply non-rice carbohydrate foodstuffs, diversify local food consumption, develop food processing industries and agro-industries, source foreign exchange through exports, and support increased food security and food self-sufficiency. The problem of cassava production and productivity in the management of cassava farming in Jember Regency has strong implications in relation to the specification and response estimation of the production function. If productivity is one component of increasing the competitiveness of cassava, there will be discontinuity in responding to incentives in the market. The purpose of this study was to measure the competitiveness of cassava in Jember Regency using revealed comparative advantage (RCA) analysis techniques. The results show that for the cassava commodity has a value of 17.23 or above one, which means cassava has a comparative advantage compared to other regions with the same commodity. The high of RCA value can occur due to several things, for example the influence of the need for dried cassava to industry so the cassava production is prioritized to meet the needs of dry cassava outside the region (exports), or the domestic dry cassava flour industry is developing, efficient, or attractive for investors to engaged in the agro industry because of the large profits. This value has increased when compared to the previous year which was 16.31. This can occur because the demand for cassava from outside the region has also increased as a raw material for bioethanol and its derivative products as well as improved prices at the farm level and the average price of cassava in the national market.

Keywords: Cassava, Competitiveness, Revealed Comparative Advantage (RCA)

Designing Technology Management for Coffee Smallholder to Promote Smart Agribusiness Implementation

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Abstract

Indonesia has been a leading global coffee producer. Smallholders are intensively involved in cultivation and processing phase in the coffee value chain. Meanwhile, they also connected closely to the roaster, trader, and consumer. Each phase in the coffee value chain faces economic, social, and environmental issues that affect the future sustainability coffee industry. Coffee agribusiness is demanded to construct a competitive advantage to supply expanding global consumption through increasing productivity, implementing technology, using natural resources efficiently, and responding the increasing need for climate-smart agriculture. Smart agribusiness is growing in importance due to its function in providing the coffee agribusiness with the infrastructure to leverage advanced technology is needed to develop a competitive value chain. On the other side, coffee smallholder is characterized by low education and skills, low ability to implement Good Agriculture Practices, limited access to asset, lack of access to credit, limited access to technology, and low of technology adoption. Technology management, as the integrated planning, design, optimization, operation, and control of technological products, processes and services, would be a strategic way to promote smart coffee agribusiness implementation. Hence, the aim of this study is twofold: (1) to analyze the constraints in smart coffee agribusiness implementation, and (2) to design technology management in supporting smart agribusiness for coffee smallholder. The results of this study provide useful information about technoware, humanware, infoware dan orgaware, as components of technology, to support coffee smallholder in increasing performance by implementing the smart agribusiness.

Perfecting Policies Of Chili Agribusiness To Support Food Security: Evidence From Indonesia Districts

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Abstract

The availability of chili supply to meet domestic demand is consequential, especially mitigating the volatility of chili prices. The fluctuating development of chili prices implies that the preservation of chili supply is imperative in protection of food price stability. It is because decreased of chili productivity will lead to price increases with increased demand, while excess supply also causes prices to drop, especially at the farm level. The districts of Jember and Banyuwangi as the largest chili suppliers in East Java need to make strategic policies so that production, productivity, and prices of chilies do not fluctuate from time to time. The purpose of this study was to develop a chili agribusiness development strategy to support food security in Jember and Banyuwangi. The analytical tools used are SWOT analysis and Analytical Hierarchy Process (AHP). The study was found that the main policy priorities in Banyuwangi District were increasing information on prices and chili products, strengthening the commitment of farmers, traders and industry, and increasing trust among industry players. Whereas in Jember District, namely strengthening the commitment of farmers, traders and industry, minimizing distribution barriers, and ease of obtaining funds.

Keywords: Chili, Food Security, Agribusiness Policy

Microgreens Prospects in Supporting Agriculture and Healthy Food

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Abstract

Microgreens refer to foliage, baby vegetables and legumes that are harvested at a seedling stage just after the sprouting has begun and when the cotyledons of the plant had fully developed with a plant height for about 5 -10 cm. This study was made for 2 purposes, namely: 1) to determine the prospects of microgreen farming in an effort to support food quality improvement at the family level, and 2) to determine the prospects of microgreen business in an effort to increase household income. The results of the study showed that microgreens had a higher value of vitamins, minerals and beta-carotene than adult plants, which was 30% higher, so that by consuming microgreens the level of consumer health increased and healthier than before. In addition, the increasing awareness of healthy living of most people resulted in increasing microgreen consumers which will eventually become an opportunity to develop a microgreen business to increase household income. Furthermore, the microgreen business in Indonesia is still new and only in a few big cities, so the opportunity is still wide and open. In addition, microgreen cultivation can be cultivated on household scales without requiring a large area of land. This is in accordance with the characteristics of women, especially housewives who like to farm on a small scale around the house.

Keywords: microgreens, seedling stage, baby vegetables, healthy food

Differences in Consumer Attitude Towards Online Shopping of Fresh Products Before and During Corona Virus Disease 19 Pandemic

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Abstract

The aim of this study are to analyze the attributes in consumer considerations towards purchasing fresh products online before and during the Covid-19 pandemic and to analyze differences in consumer attitudes towards purchasing fresh products online before and during the Covid-19 pandemic. The study was conducted from August to September 2020. The population in this study were consumers who had purchased fresh products online, whose characteristics and quantity were unknown. Respondents in this study were 77 people who were taken by incidental sampling technique. The data obtained were analyzed quantitatively using Fishbein's multi-attribute analysis to analyze the attributes of consumer attitudes. Meanwhile, differences in consumer attitudes before and during the pandemic were analyzed using Wilcoxon Signed Rank Test. Based on Fishbein's multi-attribute analysis of the attributes of fresh products before the pandemic, consumers perception the hygiene of product as a very important attribute, while during a pandemic, the freshness of product is the most important. Furthermore, in the attributes of online stores, before and during the pandemic, transaction security is considered very important attribute by consumers. The Wilcoxon test results show that there are differences in consumer attitudes towards online shopping for fresh products before and during Covid-19 Pandemic.

Keywords: consumer behaviour, Covid-19 pandemic, Fishbein multi-attribute, fresh food, online shopping

Participation And Interest In Young Generations Of Business Distribution Of Strategic Food Commodities In South Sulawesi

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Abstract

The development of strategic food commodity distribution businesses in rural areas really requires participation and strengthening the interest of the younger generation so that the distribution system is more efficient so that food availability, accessibility and affordability can be fulfilled. This study aims to determine the level of participation and interest of young farmers in the development of strategic food commodity distribution businesses. This research was conducted in the area of Gowa Regency, South Sulawesi Province. The sampling method used purposive sampling, which is deliberately selecting young farmers who are members of farmer groups, so that the sample obtained is 42 respondents. Data analysis is descriptive qualitative and quantitative analysis (scoring technique with a Likert scale). The results of this study indicate that the level of participation of young farmers in the strategic food commodity business development program is assessed from three aspects, namely planning, implementation and evaluation. The level of participation in the planning aspect was 68.19 percent, categorized as high, while the implementation and evaluation aspects were respectively 65.14 and 58.86 percent which were categorized as moderate. Thus, the participation rate was generally 64.06 percent, which means that it was quite participatory. The interest of the younger generation in the 'marketing/distribution business' of strategic food commodities is in the medium category of 65.81 percent.

Keywords: youth, participation, interest, distribution, strategic food

The Benefits Of Aplication Minapadi In Rainfed On The Level Of Household Food Security Of Farmers In Basala District, Sout Konawe Regency

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Abstract

Mina Paddy is an agricultural system that combines rice and fish farming on the same land. The purpose of this study is to determine the level of household resilience of Minapadi farmers in the rainfed areas of the BasaLa Subdistrict. The research was conducted in Basala District, Konawe Selatan Regency because this sub-district is the location that implements the largest Minapadi system. The population in this study were all 68 PEOPLE who applied the Mina Padi system. Determination of the sample is determined by the census method which takes all populations as a sample of 68 people. The data analysis used is the measurement developed by Johnsson and Toole, namely the cross classification between the share of expenditure and the level of energy adequacy. The results showed that the level of household food security of mina padi farmers was 13.24% food security, 44.12% lack of food, 22.05% food insecurity and 20.59% food insecurity.

Keywords: Mina Padi, Food Securty, Rainfed

Analysis Of Rice-Cattle Integrated System Model To Support Increased Farmer Income In Buke District, Konawe Seratan Regency

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Abstract

The purpose of this study was to determine the application model of the rice-cattle integrated system implemented by lowland rice farmers and to know the further acceptance of lowland rice farmers by implementing the rice-cattle integrated system. The population of this study was all lowland rice farmers or 25 people who implemented the integrated system. Determining the number of samples determined by the census. For this reason, the sample size of the survey was 25 people. The types of data used are primary and secondary data. The data analysis used is a descriptive analysis and provides an overview of the application model for rice-cattle system integration and income analysis at the study site. As a result, it is shown the integrated system application model applied by lowland rice farmers, namely cow fertilizer used as rice fertilizer and rice straw used as bran for animal feed. The income is IDR 29,068,731 / year. This income comes from the sale of cows

Keywords : Integrated System, Rice-Cattle, Income

Canning Technology In The Traditional Food: A Portrait Of SMEs Technology Transfer Towards Product Commercialization

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Abstract

Emerging technologies in canning technology can preserve food within a certain period, mainly traditional foods with the development process of transfer technology. Through SMEs, the prospect of traditional food canning can use as a way out in increasing sustainable economic value. This research aims to illustrate the development of traditional food canning technology processes by transferring technology towards product commercialization in SMEs. This research used a qualitative approach with descriptive analysis through field study approaches, library studies, information tracing related to the development of traditional food canning processes through technology transfer stages. This study's results are an overview of the best practices in traditional food canning products with their advantages and competitiveness. SMEs are edified into canning technology training programs. The result is 2.38% resigning because of something; 2.38% expressed inability to participate in the transfer program, 14.29% participated in the re-program, and 80.95% were declared to have graduated from the technology transfer program. This study reveals information product canning technology for traditional food as reference and recommendation, which tailor to SMEs' implementation.

Keywords: Canning Technology, Product Commercialization, Traditional Food, Portrait of SMEs, Transfer Technology

The Enterpreneurship Characters Of Water Apple Farmer In Wonosalam District Demak Regency, Indonesia

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Abstract

Entrepreneurial character is needed to develop water apple farming in Wonosalam District. The purpose of this study was to determine the entrepreneurial character of water apple farmers, to determine the factors that influence the entrepreneurial character of water apple farmers and to determine the relationship between entrepreneurial character and production and income of water apple farming. The research was carried out in water water apple production centers in Wonosalam districts, Demak regency. Respondents were 72 farmers who were chosen randomly. The research instrument was measured with a Likert scale of 1 to 5. Multiple regression analysis techniques were used to determine the factors that influence the entrepreneurial character of water apple farmers, while to determine the relationship between entrepreneurial character and cashew farming production and income, the Spearman rank correlation analysis was used. The results of the analysis show that the entrepreneurial character of water apple farmers in Wonosalam District is strong. The entrepreneurial character of water apple farmers is influenced by skills, capital, market orientation, partners and relationships have a positive influence. The factors that have a negative effect are education, experience and government support. The stronger the entrepreneurial character of the farmers, the higher the opinion level of water apple farmers.

Keywords: water Apple, entrepreneurial character, production, income

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Risk Mitigation and Structure Analysis of Logistics Cost for Marketing Pindang Fish Supply Chain in Bawean Island, Gresik, East Java

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Abstract

Nowadays, to distribute pindang fish, an integrated operational system is needed including fishermen, collectors, processors, traders and consumers. The purpose of this study was to identify supply chain models and the risks that exist in the supply chain in Bawean Island, determine risk mitigation and risk treatment, analyze marketing pindang fish logistics cost based on logistics activities, and provide recommendations to each tier of pindang fish supply chain. The research was collected by convenience sampling through in-depth interview using interview guidance. Identification, analysis, evaluation, and risk management were analyzed by using Rapid Agricultural Supply Chain Risk Assessment (RapAgRisk). The logistic cost was calculated by using the Activity-Based Costing (ABC) Method. The results indicated the existence of risks in each tier. Logistics cost structure analysis showed the highest proportion of activity cost in the supply chain which were procurement activities. The research concluded that there was a linkage between the logistic cost structure and the risk mitigation actions in marketing pindang fish supply chain.

Keywords: marketing pindang fish, logistic cost structure, supply chain risk management

Factors Affecting Market Efficiency of Grain in Central Java

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Abstract

The purpose of this study was to analyze marketing distribution, factors affecting marketing, and margins of grain in Undaan Sub-District, Kudus Regency. The survey was conducted from October to November 2018 in Undaan Sub-District, Kudus Regency. The data of marketing margin and marketing efficiency were descriptively analyzed using multiple linear regression analysis. The result showed that there were two patterns of marketing channels of grain; first, farmers' → rice mills and second, farmers' → middleman → rice mills. The marketing margin of the first pattern was Rp. 0.00, while the marketing margin of the second pattern was Rp. 525.93 at the middleman level. The marketing efficiency of the two patterns was efficient in term of farmers' share. The result of the multiple linear regression showed that the channel pattern and the selling price as independent variables were the factors influencing marketing efficiency.

Keywords: grain, marketing efficiency, marketing margins, marketing channel patterns

Stimulation Of Various Sounds On Growth And Productivity Of White Oyster Mushroom (*Pleurotus ostreatus*)

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Abstract

White oyster mushroom is one of the most consumed and beneficial commodities for the community. Growth and productivity of white oyster mushrooms are influenced by several factors, sound which is one of the environmental factors. This study aims to determine the effect of giving music related to frequency modification of white oyster mushrooms. The design used in this study is Factorial Completely Randomized Design (CRD) with two factors: the type of music and cutting frequency, four treatments and seven replicates so that there are 28 experimental units. This research was conducted in Kampung Pasir Huni, Ciwalen Village, Sukaresmi District, Cianjur. The results obtained in this study indicate the treatment Murattal Al-An'am (6: 141) with cutting frequency of having an influence on the growth acceleration by 0.99 cm / day, and the time it takes the mycelium to meet baglog for 26 days. Fresh weight is only influenced by the type of music that is giving the treatment of Murattal Surat Al-An'am (6: 141) gives the best results weighing 120 grams per baglog.

Keywords: White oyster mushroom (*Pleurotus ostreatus*), Sonication, Frequency, Growth, Productivity, Mycelium.

Application of Standard Operating Procedures for Export-oriented Snake Fruit Farming

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Abstract

Snake fruit is one of the major agricultural export commodities in Magelang Regency. One of the efforts to improve the quality of snake fruit production is through the application of standard operating procedures (SOP) for export-oriented of snake fruit farming. This paper aims to analyze the level of application of SOP and factors related to the level of application of the SOP for export-oriented snake fruit farming. The level of application of the SOP was analyzed using a Likert Scale, while the factors corelated to the level of application of the SOP were analyzed using Spearman Rank correlation. The results showed that the level of application of the SOP for export-oriented snake fruit farming was in medium category. Moreover, land area, labour, production level and capital were significantly strong and positive correlated to the level of application of export-oriented snake fruit farming SOP.

Keywords: SOP appplication, snake fruit export, export-oriented farming, salak pondoh

Robustness of dairy cattle farming industry against Covid-19 Pandemic in Joint Business Group (KUB) Tirtasari Kresna Gemilang, Malang

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Abstract

The impact of Covid-19 pandemic disrupts the supply chain for livestock breeds, feed, medicines, and others give affect the sustainability of livestock businesses. This study aimed to determine the dairy cattle business's changes during the pandemic at Joint Business Group KUB Tirtasari Kresna Gemilang, Malang Regency, Indonesia. The data were obtained using the purposive sampling method. Respondents consisted of 17 dairy farmers (10%) of the total KUB members. The results showed that the farmer had been farming for 10-30 years with a population of 3-8 cows. The average milk production of a cow can be maintained at 20 liters/ head/ day. Cows were given forage and concentrate (made by KUB) 2-4 times a day. The total cost of feed per month has not changed, which is around IDR 500,000 to IDR 3,000,000. The selling price of milk is IDR 5,400 before and during the pandemic. Health management methods include routine sanitation, injection vitamins, pre-dipping with warm water, and post-dipping with iodine. From this study can be concluded that the farmer of KUB Tirtasari Kresna Gemilang can survive with their management and farming experience, so they were able to sustain and have no problems with their business during the pandemic.

Keywords: livestock, management, business sustainability

Replacing the Growth Media to Reduce the Seedling Weight of Citrus (*Citrus nobilis* var. *macrocarpa*) and Its Effects on Seedling Growth

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Abstract

Seedling translocation of plantation crops is labour intensive and expensive. It is heavy due to the large amount of soil that is needed to growth the seedlings. This research aims to overcome the difficulties by reducing or replacing the growth media of the seedling and examine its effects on the seedling growth. The trial was conducted in Monterado Experimental Farm, Bengkayang Regency, West Borneo. It was arranged in RAK factorial with two factors, which are the type of growth media and biocontrol agent (BCA). The type of growth media factor consists of two levels, soil and cocopeat, while the BCA factor also consists of two levels, *Trichoderma* and Bioboost©. Examinations were conducted after a period of two-weeks incubation for seedling survival, and five weeks after the end of incubation for the plant growth parameters. The results showed that all the seedlings survived the incubation period. No significant different in the number of leaves, leaf width, number of shoots and shoot lengths were detected. Cocopeat is the best option between both mediums since it much lighter than soil and reduced the weight of seedlings up to 79%.

Keywords: citrus, seedling, *Trichoderma*, BCA, cocopeat

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Porter 5 Forces Analysis, Marketing Strategy and Market Segmentation of Product Diversification Warm Nutmeg Beverage Case Study Cisarandi Village, Warungkondang, Cianjur

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Abstract

Good product diversification can generate new selling value. The nutmeg defect can be maximized into a new variable that has a selling value. One of which is by making the nutmeg defect into a nutmeg syrup. So, from a whole nutmeg there is no unused part. This research uses descriptive analysis method (data and graphics). This type of research conducts a survey by distributing questionnaires randomly to target male and female respondents. This study used *Porter's 5 Forces* analysis, segmentation and diversification of nutmeg products. Then the results of this study are used to formulate market segmentation. The results of this study found that the availability of nutmeg in Cisarandi Village based on *Porter 5 Forces* Analysis, that is to say, there are many new competitors in marketing nutmeg, however, the bargaining power of consumers will be higher because of the large number of nutmegs sold in the market. The absence of product characteristics from processed nutmeg is also considered as a major obstacle so that the need to diversify products from processed nutmeg becomes the main point in developing the existing economic value of nutmeg. Market segmentation analysis, classified into geographical segmentation, behavioral and loyal status. Cianjur is an area with a cold climate, for loyal status, many consumers of nutmeg have thought about making warm nutmeg beverage as an alternative form of nutmeg. For product diversification from nutmeg that produces warm nutmeg beverage, as many as 88.4% of respondents like nutmeg and really want to consume warm nutmeg beverage. This result means that 50% of the respondents prefer warm nutmeg beverage and have a strong desire to buy more warm nutmeg beverage.

Key Words: Diversification, defect, nutmeg, warm nutmeg beverage

Optimization Of The Functional Drink Formulation Of Nutmeg Made From Nutmeg (Myristica Fragrans) And Ginger (Zingiber Officinale)

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Abstract

Nutmeg has a distinctive aroma and is quite popular, but nutmeg has a sour and sour taste, so it is not consumed directly and needs to be processed. Based on this, additional ingredients are needed that will give a specific taste to the nutmeg functional drink and add benefits to the body. One of the flavoring ingredients that can be added to nutmeg functional drinks is ginger. This research was conducted on June 28, 2020 for formulation, for organoleptic testing on panelists based on preferences carried out on July 1, 2020, using 5 formulations, namely F1 (100% Ginger), F2 (75% Ginger + 25% Nutmeg), F3 (50% Ginger + 50% Nutmeg), F4 (25% Ginger + 75% Nutmeg), F5 (100% Nutmeg) with parameters Color, Taste, Aroma, Texture. The overall results show that the most popular is formula F5 (100% nutmeg). Because the name of the product is Wedang Nutmeg, there needs to be a sensation from the ingredients of ginger, according to the results of this study, the percentage of ginger received by the panelists is around 25%, and this formula is contained in sample F4 where there is 75% nutmeg with the addition of ginger about 25% and based on calculation and data processing using the Response Surface Method (RSM) that the optimization value F4 is close to the optimization value F5. So it can be concluded that wedang nutmeg with the best addition of ginger and according to the Wedang Nutmeg criteria is sample F4

Keywords: Wedang nutmeg, Ginger, Functional Drinks, Side Products.

Pests Density And Natural Enemies And The Difference In Soybean Plants Yields With Natural Pesticide Application

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Abstract.

Pest control using natural pesticides is one of the options. Papaya, lemongrass, and galangal are only three out of many plants that can be used as natural pesticides. This study was conducted from January to April 2020 in Anday Assessment Installation of West Papua Assessment Institute for Agricultural Technology with altitude of ± 8 m above sea level. This study used 7 treatments with 3 replications. Natural pesticide application was conducted with 7 treatments. Natural insecticide spraying and observation of pests and their natural enemies were done in a weekly interval started from 2 weeks after cultivation. Natural pesticides treatments applied were as follow: Ko (control / without natural pesticide); P (Papaya); S (lemongrass); K (galangal); PS (Papaya + Lemongrass); PK (Papaya + Galangal); SK (Lemongrass + Galangal); SK (Lemograss + Galangal). The results of this study is the applied extract concentration of natural insecticide; which is 125g/l dry material. To improve its effectivity, natural insecticide concentration might be raised up to 3x of the current concentration or above 300g/l dry matter. In terms of production aspects, the application of galangal extract insecticide was the best treatment for it yielded 4.46 soybean per plot.

Keywords: density, pests, natural enemy, natural insecticide, soybean

Risk Preference and Choice of Sugarcane Planting Method: Are Risk-Taker Farmers More Likely to Choose Bud Chip Methods?

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Abstract

One effort to increase the productivity of sugarcane is by using the method of bud chips. Bud chip method has proven to improve the productivity of sugarcane and produce more cost-efficient, but still a few farmers who use it. This is due to higher production risk, and sugarcane farmers are still not technically skilled. This research aims to (1) analyze the magnitude of the risk of sugar cane production with bud chip and conventional method; (2) know the characteristics of sugar cane farmers with bud chip and conventional method in facing production risk. The research was conducted in the working area of PTPN X company (Kediri Regency, East Java Province, Indonesia). The sample was taken incidentally by selecting 60 sugarcane farmers (20 farmers sugarcane with the bud chip method and 40 sugarcane farmers with the conventional method). The results showed that (1) sugar cane farmers with the bud chip method have a higher risk of production than conventional methods; (2) sugar cane farmers with bud chip method classified as a risk-taker and sugar cane farmers with conventional methods were risk averters. Intensive training and assistance from the sugar factory are needed to improve the application of bud chips at PTPN X company.

Keywords: risk averters, sugarcane yield, sugar factory, productivity

Analysis Of Willingness To Pay For *Ketakasi* Ground Coffee In Jember Regency

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Abstract

Willingness to pay (WTP) has been widely used to measure the value of an item, both private and public goods, also shared resources. More recently, the WTP concept is also applied to marketing management for product development and pricing strategies. *Ketakasi* ground coffee is a superior or premium rubusta coffee product of Jember Regency. The price of ketakasi ground coffee per package with a netto of 160 grams was sold at IDR 15,000, relatively more expensive compared to the price of branded ground coffee product which were sold at an average of IDR 12,000 per pack. Perception about the price of *Ketakasi* ground coffee which was considered expensive by consumers could make an obstacle for producers to achieve the expected target customers. This research aimed to determine the value of WTP of *Ketakasi* ground coffee; and factors influencing the WTP. A number of 60 respondents were interviewed in this research. Average value of consumers' willingness to pay was analyzed by the descriptive statistics, while the factors influencing the willingness to pay consumers were analyzed by logistic regressions. Results showed that the value of consumenrs' WTP reached IDR 16,000 per pack. This value was actually higher compared to the current market price, i.e., IDR 15,000, with consumer surplus of IDR 1,000. Factors significantly influencing consumers' WTP of *Ketakasi* ground coffee were consumer's gender, types of jobs, and income.

Keywords: Coffee, willingness to pay, consumer surplus, logistic regression

Strategy To Increase Implementation Of Good Agricultural Practices (Gap) In Sugarcane Smallholder

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Abstract

Sugarcane (Saccharum officinarum) is a sugar raw material plant with high economic value. The unachieved optimal yield and crystal level have led the government to expect sugarcane farmers to implement Good Agricultural Practices (GAP) guidelines. A strategy is needed to increase farmers' interest in implementing GAP. This study aims to determine the level of Good Agricultural Practices (GAP) application in smallholder sugarcane farming activities and strategies for its improvement. The research method used indicator scoring for the GAP application and a combination of AHP-SWOT (Analytical Hierarchy Process - Strength, Weakness, Opportunity, Threats) to formulate strategies. Interview and observation methods were carried out on a number of farmers in 4 sub-districts in Jombang Regency, East Java with a cluster sampling method. The results showed that the level of sugarcane Good Agricultural sugarcane Practices (GAP) application was in the high category with a score between 73-88. However, there was a technical application of sugarcane cultivation that was less than optimal, namely aspects of seed preparation, pest control, disease control and the cleanliness of sugarcane. The priority of the strategy for improving the implementation of Good Agricultural Practices (GAP) of sugarcane is the WT (Weakness-Opportunities) strategy, which is to increase assistance to farmers to carry out farming activities in accordance with sugarcane GAP guidelines.

Keywords: good agriculture practices, sugarcane, smallholder

The Role of Social Capital in the Success of Beef Cattle Agribusiness in Limapuluh Kota District

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Abstract

This study aims to determine the role of social capital in the success of beef cattle agribusiness. This research was conducted in Limapuluh Kota District and used a survey method combining qualitative and quantitative approaches. Furthermore, research locations were determined in Lareh Sago Halaban sub-district, Luak sub-district and Harau sub-district due to the centers of beef cattle development. Sampling of farmers was carried out by purposive random sampling of 60 respondents consisting of members of the livestock group and key informants from parties related to the livestock group. The results showed that the social capital of the breeders played a high enough role (75.35%) in the success of the beef cattle business. The high level of social capital that breeders have is because of a high level of participation in group activities, a sense of tolerance, reciprocity and a fairly high sense of trust among members. Moreover, to support the success of farmer groups in running their businesses, some efforts are still needed such as improvement of the system of values and norms, the existence of cooperation, and directed cooperation networks.

Key Words: social capital, beef cattle, trust

Farmer's Group Dynamics On Rice Farming In Using *Jajar Legowo* System In Ambulu Sub District

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Abstract

Group dynamics is a necessity for every individual who lives in groups by interacting with and needing each other. Group dynamics provide an overview of the activities of farmer groups in cultivating the *jajar legowo* system. Group dynamics are analyzed based on group goals, group structure, task function, group coaching, group cohesiveness, group pressure, group work effectiveness, and hidden intentions. The purpose of this study was to determine the group dynamics in applying the *Jajar Legowo* system on rice farming. The research area was determined purposively in Ambulu sub District. Determination of the research sample was carried out by simple random sampling on farmers and farmer group managers who planted rice using the *Jajar Legowo* system. The number of research respondents was 65 people consisting of the group leader and group members.The results showed that 98.8% of all members stated that the dynamics of the farmer groups were at high criteria. This is due to the achievement of indicators for the aspect of group goals, group coaching, group work effectiveness and hidden intentions which are in the high category. As many as 95.38% stated that farmer groups have high group goals. The main objective of the farmer group is to increase the knowledge of farmers in the *jajar legowo* system of rice farming, so that it will have an impact on increasing farmers' income and increasing good relations between group members. 100% of respondents stated that the indicator of farmer group coaching in the jajar legowo system of rice farming is high, which is due to the role of the group leader in motivating members to attend group activities. The high group effectiveness (84.6%) is due to the satisfaction of group members with the work planning carried out by the group in the legowo row system of rice farming. As many as 93.85% said that personal goals such as increased knowledge and increased income, ease of obtaining fertilizer from the government, distribution of fertilizers and sales of crops had been achieved as expected by farmers.

Keywords : Group dynamics, Rice Farming, Jajar Legowo System

Tengger Community Social Capital in Building Social Ecological Resilience of Communities during the Pandemic

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Abstract

The ecological condition of the Tengger community, which is a dry and rainfed area, causes vulnerability for farmers, especially vegetable farmers. In addition, the covid-19 pandemic has also caused changes in farmers' income due to the fluctuating price of crop yields. However, the existence of social capital has made this community able to build resilience in the midst of a pandemic. The purpose of this study is to: describe the form of social capital that exists in the Tengger community and how it impacts on building community resilience, especially during the pandemic. This study used a qualitative approach and data analysis used an interactive model by Miles and Huberman. The results showed that social capital in the form of social bonding capital consists of various local wisdoms that are still practiced by the community in overcoming water shortages and fluctuations in commodity prices. Bridging social capital in the form of a HIPAM institution capable of managing water needs for farmers. Furthermore, linking capital is in the form of harmonious cooperation between the village, Perhutani, and Bromo Tengger Semeru National Park in an effort to manage water sources in the area.

Keywords: resilience, bonding social capital, bridging social capital, and linking capital

Na-Oogst Farmers' Survival Strategy during Covid-19 Pandemic in Jember Regency

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Abstract

This research aims to find out the production and quality of Na-Oogst tobacco during the Pandemic period and the strategy of surviving farmers during pandemics in the Ambulu region. This research method uses descriptive methods and types of qualitative research. Data collection methods use technical observations and interviews. Primary data was compiled from tobacco farmer Na-Oogst. Secondary data comes from literature and documentation. The results showed that Na-Oogst tobacco production experienced many obstacles during the Covid-19 pandemic due to fertilizer limitations. After the production of tobacco absorption to cigar factories is decreasing. However, the obstacle was anticipated with the support of cigar factory managers who continued to absorb Na-Oogst tobacco.

Keywords: Na-Oogst, Defensive Strategy, Jember Cigar.

The Roles Of Institution In Upstream Sector To Improve Coffee Quality

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Coffee (Coffea sp.) is one of the primary plantation crops in Indonesia. Bondowoso district is renowned for Arabica coffee. Cooperation with institution established after coffee production area in Sumberwringin sub-district, Bondowoso district developed. It supported by Bondowoso Regent regulation number 25 of 2016 about Arabica Ijen Raung coffee governance and commerce. Based on those regulation, the roles of institution became the key to run the programs. The roles of institution in upstream sector to improve coffee quality need to be examined. The purpose of this study was to find out the roles of institution in upstream sector to improve coffee quality. Purposive method used to determain research area. The research method used in this article was descriptive qualitative. Purposive sampling used to determain informant. Miles and huberman method used to analyze the data. The result showed that the institution in upstream sector that improved coffee quality especially in Sumberwringin sub-district, Bondowoso district were Perum Perhutani, plantation division in Dinas Pertanian, and Usaha Tani Enam (a coffee farmers organization). As technician, plantation division in Dinas Pertanian assisted, established, and educated the farmers. Farmers organization has a role as a forum to share information among the members.

Keywords: Keywords: Arabica coffee, role theory, institution

The Response of Women Farmers in Management of Sustainable Food-Reserved Garden in The Stunting Area in Yogyakarta Special Region

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Abstract

Stunting or short toddlers, is a condition that deserves an attention of all parties. This condition is caused by nutrition lack of children and mothers. Sustainable Food House Areas (SFHA) is an effort to increase family nutrition intake. This study aims to determine the response of members of the female farmer group to the management of the Sustainable Food House Area (SFHA) in the handling priority stunting areas in Special Region of Yogyakarta. This study was carried out from August to October 2018, in Pengasih and Samigaluh Districts. The two sub-districts are two areas among the 5 sub-districts in Kulon Progo which are included in the 1,000 stunting management areas in Indonesia. The method used is a survey involving 35 members implementing SFHA from the 2018 National Budget. Data were analyzed descriptively. The response of the members is seen from the attitude of cognition, affection, and conation, as well as the participation of the members towards the implementation of SFHA. The results of the study show that the respondents have a productive age, ranging from 24-63 years, with various levels of education ie. high school (42.86%), junior high (42.86%), primary school (11.43%) and bachelor (2.86%). The attitude of the members is positive, both in terms of cognition, affection, and convention with a high level of participation

Keywords: Response, female farmer groups, Sustainable Food House Area, Stunting

Sustainability Assessment Of Smallholder Cassava Farming In Indonesia

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Abstract

Indonesia is one of the largest producers of cassava in the world. Ironically, Indonesia also one of the top importers of tapioca starch. This condition highlighted the unsustainable cassava farming system in Indonesia. This research will assess the sustainability of smallholder cassava farming in Indonesia, with focus on the provinces that become the main producer of cassava. The sustainability assessment was implemented to measure the performance of smallholder cassava farming in three dimensions, namely the economic, ecology and social dimensions of sustainability. This research modified the Rapfish (Rapid Appraisal for Fisheries Sustainability) and tailor made the indicators of sustainability for smallholder cassava farming. The results from the sustainability assessment showed that among 12 Provinces that become main cassava producers, only the Province of East Java, Lampung and North Sumatra that showed good sustainability. For the economic dimensions, the Province of Lampung and North Sumatra showed the highest score of sustainability. However, the Province of Lampung showed low score in the ecology sustainability dimension. Most of the Provinces assessed in the study showed a low score in the social sustainability dimension, thus emphasized that the smallholder cassava farming in Indonesia are need a substantial policy support to improve the farmers welfare. The sustainability assessment also reports several leverage attributes that sensitive to the sustainability of smallholder cassava farming. These leverage attributes are significant to construct the correct policy to the sustainable smallholder cassava farming in Indonesia and to support the national policy of food security.

Keywords: sustainable agriculture, agro-industry, food system, food security

Smart Social Political In Industrial Agriculture

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Abstract

Indonesia is a country with agricultural potential. Its management is still traditional, and this potential is still not considered a possibility by regional leaders. The alignments of local government leaders on agriculture also differ from one region to another. Because of regional autonomy and it is very disadvantageous if regional government politics do not side with agriculture. The potential of a country is the raw material for the development of a nation. One of the essential indicators to determine the economic conditions in a region/region in a certain period is through Gross Regional Domestic Product (GRDP) data, both at current prices and at constant prices. In this modern development, it requires speed and accuracy in agricultural inputs and monitoring, so agriculture without technology will also not increase productivity. This research analyzes the potential of the Indonesian state and how to improve Indonesian agriculture quality. The development of various Smart IoT-based devices applied to agriculture is changing the face of agriculture, which helps crop production by increasing it and making it cost-effective and reducing waste. Seeing agriculture as potential is not enough, must combine agriculture with technology and make Indonesian agricultural raw materials into the industry.

Keywords: Potential, Gross Regional Domestic Product, Development, social politics, industrial

Community Perceptions of Ethnobotany: Utilization for Herbal Medicines and Traditional Ceremonies of the Tengger Community

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Abstract

Ethnobotany plants in Ngadisari Village have decreased, even though the use of ethnobotany plants is a tradition that has been carried out from generation to generation. Ethnobotany plants are needed by the perch community as herbal medicine and traditional ceremonies. The purpose of this study was to determine the perception of the Tengger community in the use of ethnobotany plants as herbal medicine and traditional ceremonies. Public perceptions will be analyzed using a Likert scale. The analysis showed that there were 13 types of ethnobotany plants used as herbal medicine, while 3 types were used as traditional ceremonies. The results of the assessment of community perceptions in the use of ethnobotany plants for herbal medicine were very low with a value of 13.9%, while the use of ethnobotany plants for traditional ceremonies was classified as very high with a value of 38.7%.

Key Words: Perception, Tengger Society, Ethnobotany Plant

Design of Video-Based Extension Media Concerning the Utilization of Bekatul as Functional Food

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Abstract

The objectives of program were to produce video-based extension media design, (2) to produce a credible agricultural extension media in helping community service, particularly in relation to the processing of *bekatul* (rice sifting) into functional food in *dasawisma* (ten house) groups. Data was analyzed using triangulation technique. The result of research showed that the video-based extension design concerning the processing of *bekatul* into a variety of functional food used combined text (letter), image, sound, colour, and animation, constituting the advantages (strengths) of video media compared with other media.

Keywords: *bekatul*, design, media, extension, video

Design of Interactive Agricultural Extension Media in the Material of Family Medicinal Plant Utilization

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Abstract

This program aims (1) to produce interactive extension media design in pandemic time, (2) to produce agricultural extension media in helping community service, particularly in relation to the utilization of family medicinal plant to students. Data was analyzed using triangulation technique. The result of research video-based extension design about the introduction of family medicinal plant using combined text (letter), image, sound, and colour in the form of animation video supported with direct delivery using zoom and google meeting applications.

Keywords: design, interactive, media, agricultural extension, medicinal plant

Analysis of Organic Village Program Implementation and Sustainability Status of Sarinah Organic Farmers Group, Ciparay, Bandung Regency

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Abstract

Agricultural sector has a very important and strategic role in Indonesia. One of the government's strategic agendas in Nawacita is to achieve sustainable development in agriculture through the "1,000 Organic Farming Villages" program. The government chose Sarinah Organic Farmers Group to develop an Organic Farming Village in Ciparay, Bandung. The purpose of this study was to determine how the implementation of "Organic Farming Village Development", its impact on the income of organic farmers compared to conventional farmers, and the sustainability status of the Sarinah Farmer Group. The results showed that at the beginning of its implementation, not many farmers were willing to join and switch from conventional farming to organic SRI farming. Currently the farmers and production is always increasing. The study found that organic farmers average income was IDR 31.6 million / ha / planting season with higher R/C Ratio: 2.21 compared to conventional farmers who earn average income: IDR 10.78 million / ha / planting season and R/C Ratio1.66. The status of the Sarinah Farmer Group's institutional sustainability is high. This is a manifestation of the mission of the Bandung Regency Government to achive sustainable development.

Keywords: rice, Organic farming, R/C Ratio, sustainable development

Value Added and Development Strategy of Paste Mytilus Agroindustry on Any Scale of Business In Sidoarjo Regency

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Abstract

Balongdowo Village, Candi Sub district of Sidoarjo Regency, most people work as a fisherman of mytilus and cultivate agroindustry based mytilus. The catch from the fishermen of mytilus in Balongdowo Village is processed by the agroindustries located in Balongdowo Village into various processed food products made from raw waste agroindustry dried mytilus. Waterwaste or both Mytilus is the raw material for making paste mytilus. Agroindustries located in Balongdowo village, Sidoarjo regency has long been cultivated, but until now most of the craftsmen have not showed significant development. This study was aimed to the value added, characteristics agroindustry processing waste water mytilus into paste mytilus in Sidoarjo Regency both in terms of business growth, production processes and technology, human resources, capital and marketing, and development strategy at mytilus paste agroindustry in Balongdowo Village, Sidoarjo Regency. Analyzer used include analysis of analysis table hayami, analysis descriptive, and SWOT analysis. The result of the analysis shows that: (1) Value added of paste mytilus any scale is high, (2) Characteristic of paste mytilus agroindustry in any agro industries has various results because it is based on its industry scale, (3) Strategy development paste mytilus agroindustry focused on the IRT scale provision of capital, improving the quality of human resources, labelling try to get healt-assesment certification to expand the marketing process and partnerships with entrepreneurs larger agroindustry mytilus. While paste mytilus agroindustry development strategy focused on the small scale business partnerships between actors agroindustry and dried mytilus agroindustry groups and the establishment of institutional agroindustries.

Keywords: mytilus agroindustry, value added, characteristic, strategy development.

The Factors That Influence Consumption of Chocolate Drinks in Jember Regency

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Abstract

Nowadays publics in this millennial era had became gradually aware of the benefits in consuming chocolate product. Chocolate drinks are extensively available in stores, minimarkets, supermarkets, to cafes. Therefore, the most remarkable thing was the model of chocolate beverage provided by cafes. Consumers of chocolate drinks in Jember had different reasons and could be influenced by different variables. The objective of this study was to establish the factors which were influencing cafe consumers in purchasing chocolate beverage in Jember district. The determination of the research area was carried out by using purposive method. The research method used was a quantitative method. The sampling was done by accidental sampling. The data collection method was done by using primary data (observation and questionnaire) and secondary data (documents). Data analysis was presented by using factor analysis. The results showed that all variables influenced the purchase of chocolate baverage in Jember Regency. Those 5 factors are namely: (a) social factors, consisting of variables: social class (X4), family (X6), role and status (X7), economic conditions (X10) and lifestyle (X11), (b) psychological factors, which consist of variables: age and life cycle (X8), perception (X13), learning (X14) and motivation (X16), (c) personal factors, consisting of variables: reference group (X5), occupation (X9) and personality and self-concept (X12), (d) product factors, consisting of variables: taste (X2) and beliefs and attitudes (X15) and (e) price and cultural factors, which consist of variables: price (X1) and the role of culture (X3).

Keywords : social Factors, personal factor, product factor, Chocolate drinks,