7th International Conference
Sustainable Agriculture,
Food and Energy

SAFE 2019 THAILAND

SAFE 2019
International Conference
Sustainable Agriculture,
Food and Energy.
October 18-21, 2019
Phuket. THAILAND.

Conference Programme Papers Abstracts

GREEN AGRI-FOOD ENERGY PRODUCTION FOR A BETTER WORLD IN A CHANGING CLIMATE

SAFE NETWORK
Asia Pacific Network for Sustainable Agriculture, Food and Energy

SAFE 2019 COMMITTEE

Patron|
Prof. Dr. Tafdil Husni, *The Rector of Andalas University. Indonesia.*
Asst.Prof.Dr. Hiran Prasarnkarn, *The President of Phuket Rajabhat University-THAILAND*

Executive Chairman|
Prof. Dr. Novizar Nazir–*Andalas University-INDONESIA*

Local Conference Coordinator|
Assoc.Prof. Sermkiat Jomjunyong, Ph.D., *Country Coordinator (THAILAND)*
Faculty of Engineering . Chiang Mai University.

Conference Secretary|
Dr. Worajit Setthapun, *Dean of Asian Development College for Community Economy and Technology (adiCET)*
Chiang Mai Rajabhat University-THAILAND
HP:+66 53 885 871. E-mail: worajit@gmail.com

Advisory Committee|
Dr. Paul Kristiansen–*University of New England, AUSTRALIA (Co-ordinator)*
Prof. Dr. Hj. Khudzir Bin Hj Ismail, *RECTOR of UiTM, Perlis, MALAYSIA*
Prof.Dr. Nguyen Hay– *President of Nong Lam University Ho Chi Minh City-VIETNAM*
Dr. Yunardi Yusuf–*Syiah Kuala University-INDONESIA*
Prof. dr. Dewa Putu Widjana, DAP&E. Sp.Par.K–*RECTOR of Warmadewa University–INDONESIA*
Prof.Dr. Bohari M Yamin, *Universiti Kebangsaan Malaysia, MALAYSIA*
Prof. Dr. Wan Mohtar Wan Yusoff–*Universiti Kebangsaan Malaysia, MALAYSIA*
Prof.Dr. Wan Azizah Hanom Ahmad, *UiTM, Malaysia*

Steering Committee|
Prof.Dr. Helmi– *Andalas University-INDONESIA (Co-ordinator)*
Dr. Norman de Jesus– *SAFE-Network Resident Co-ordinator (Philippines)-Pampanga State Agriculturai University- PHILIPPINES*
Assoc. Prof. Dr. Nurul Huda– *SAFE-Network Resident Co-ordinator (Malaysia)*
Universiti Malaysia Sabah (UMS), MALAYSIA
Prof. P.M.C.C de Silva, Ph.D., *University of Ruhuna, SAFE-Network Resident Co-ordinator (SRI LANKA)*
Prof. Dr. Fauzan Azima – *Andalas University-INDONESIA.*
Dr. Munzir Busniah– *Andalas University- INDONESIA.*
Prof. Dr. Amitava Basu– *Bidhan Chandra Krishi Vidyalaya, INDIA*
Prof. Nasser Aliasgharzad-Department of Soil Science- Faculty of Agriculture. The University of Tabriz-Iran.
Assoc.Prof. Nguyen Huy Bich, Ph.D.- *Nong Lam University Hochiminh City-VIETNAM*
Prof. Kohei NAKANO, Ph.D.– *Gifu University-JAPAN*
Prof. Dr. MD MIZANUR RAHMAN BHUIYAN, *Khulna University-BANGLADESH*
Dr. ir. Ujang Paman Ismail, MSc. *Universitas Islam Riau-INDONESIA*
Prof. Dr. Yuli Witono, *Jember University-INDONESIA*

Organizing Committee|

Asst.Prof.Dr. Thawatchai Thoomthong, *Phuket Rajabhat University-THAILAND (Coordinator)*
Asst.Prof. Noppadol Chanrawang, *Phuket Rajabhat University-THAILAND*
Asst.Prof.Dr.Suwicha Wiriyamanuwong, *Phuket Rajabhat University-THAILAND*
Dr. Doungrat Koikitcharoen, *Phuket Rajabhat University-THAILAND*
Asst.Prof.Dr. Pita Jarupunphol, *Phuket Rajabhat University-THAILAND*
Asst.Prof.Dr. Bundit Unyong, *Phuket Rajabhat University-THAILAND*
Dr.Atipan Saimmai, *Phuket Rajabhat University-THAILAND*
Mrs.Tipaporn Pornpirom, *Phuket Rajabhat University-THAILAND*
Assoc.Prof.Dr. Komgrit Leksakul, *Chiang Mai University-THAILAND*
Asst.Prof.Dr.Choncharoen Sawangrat, *Chiang Mai University-THAILAND*
Dr. Nuttiya Tantranont, *adiCET-Chiang Mai Rajabhat University-THAILAND*
Dr. Surachai Narrat Jansri, *adiCET-Chiang Mai Rajabhat University-THAILAND*
Dr. Chayanon Sawatdeenarunat, *adiCET-Chiang Mai Rajabhat University-THAILAND*
Dr. Hathaithip Sintuya, *adiCET-Chiang Mai Rajabhat University-THAILAND*
Dr. Surapol Dumronggittigule, *PU-Thailand*
Act. SubLt. Dr. Suwattanawong Phanphet, *Chiang Mai Rajabaht University-THAILAND*
Asst.Prof. Sermsuk Buochareon, *Maejo University-THAILAND*
Dr. Nichan Singhaputagun, *MFU-THAILAND*
Dr.Paipan Thanalerdsopit, *RMUTL-Thailand*
Mrs.Nidchanun Kanchana, *Chiang Mai University-THAILAND*

SAFE-Network Regional Secretariat|

Dr. Irawati Chaniago, *Andalas University-INDONESIA*
Dr. Helen Martinez, *PhilMech, The Philippines*
Prof. Georgina Bordado, *CBSUA, The Philippines*
Dr. Hanilyn Hidalgo, *CBSUA-The Philippines*
Dr. Febri Doni, Universiti Malaya. Malaysia
Dr. Wahyudi David – *Bakrie University-INDONESIA*
Aisman Rasinin, *MSc*–*Andalas University-INDONESIA*
Zakaria Azis, *STES Manna Wassalwa-Indonesia*
Rahmat Hidayat, ST, M.Sc.IT– *State Polytechnic of Padang –INDONESIA*
Putri Risa Andriani, *Warmadewa University. INDONESIA*
Muhammad Iqbal Syuhada, *Andalas University-INDONESIA*
Nur Selvi Safril, *Pamulang University-INDONESIA*
Dr. Ario Beta Juanssilfero, M.Eng– *Kobe University-JAPAN*
Rachel Anja Martinez, *UPLB Los Banos, Philippines*
Dr.. Pavalee Chompoorat, *Maejo University. Thailand*
Aprialis, *Andalas University-INDONESIA*
Ririn Fatma Nanda, *Andalas University-INDONESIA*
Arifatulhuda Rifka, *Andalas University-INDONESIA*
Latifa Aini, *Andalas University-INDONESIA*
Nia Boru Ritonga, *Andalas University-INDONESIA*
Mentari Larashinta, *Andalas University-INDONESIA*

Scientific Committee|

Dr. Ravindra C Joshi. *Country Coordinator for Pacific Islands (Fiji, Samoa, Solomon Islands, Papua New Guinea, Vanuatu)*
Professor Nobutaka Ito, *Chiang Mai University-Thailand*Dr. Yandra Arkeman, *Bogor Agricultural University, INDONESIA*
Prof. Dr. Mohd. Bohari Yamin, *Universiti Kebangsaan Malaysia-MALAYSIA*
Prof.Dr. Nurpilihan Bafdal, *Universitas Padjadjaran –INDONESIA*
Roostita L. Balia, *Universitas Padjadjaran –INDONESIA*
Prof. Dr. Yus Aniza Yusof-*Universiti Putra Malaysia, MALAYSIA*
Assoc.Prof.Dr. Azwani Mat Lazim-*Universiti Kebangsaan Malaysia, MALAYSIA*
Dr. Saiful Irwan Zubairi-*Universiti Kebangsaan Malaysia, MALAYSIA*

Rusmana Wijaya Setianingrat	Faculty of Animal Science, Universitas Andalas	The effects of legumes (Gliricidia sepium, Leucaena leucocephala and Indigofera zollingeriana) as substitute for Concentrate in ammoniated rice straw-based rations on rumen characteristics and in vitro methane production	AST-121
Nurbailis	Faculty of Agriculture, Universitas Andalas	EXPLORATION OF FUNGI THAT ASSOCIATED WITH BRANDH DIEBACK DISEASES IN COCOA (Theobromae cacao L.) PLANTS IN PADANG CITY	AST-122
Yulensri	Politeknik Pertanian Negeri Payakumbuh	POTENTIAL OF BACTERIA ISOLATED FROM LOCAL MICROORGANISM (LMO) OF BANANA STEM BUD AS A PEST BIOCONTROL AGENT Spodoptera litura F	AST-123
Yulensri	Politeknik Pertanian Negeri Payakumbuh	COMPATIBILITY OF SOME BACTERIA AS PESTICIDES AND BIOLOGICAL FERTILIZERS AND THE FORMULATIONS ON VARIOUS ORGANIC MATERIALS	AST-124
Kresna Murti	Politeknik Pertanian Negeri Payakumbuh	ROLE OF BIO-LIQUID ORGANIC FERTILIZERS (BIO-LOF) ON SOIL FERTILITY AND NUTRIENTS UPTAKE ON MAIZE (Zea mays L)	AST-125
Misfit Putrina	Politeknik Pertanian Negeri Payakumbuh	APPLICATIONS OF VARIOUS TYPES AND DOSAGE OF BIO-COMPOSTS ON GINGER PLANT (Zingiber officinale L)	AST-126
Noveri	Politeknik Pertanian Negeri Payakumbuh	POTENTIAL OF BACTERIA OF BANANA STEM BUD LOCAL MICRO ORGANISM (LMO) AS A BIO-FERTILIZER TO INCREASE THE GROWTH OF PADDY IN SRI METHOD	AST-127
Nelson Elita	Politeknik Pertanian Negeri Payakumbuh	THE APPLICATION BIOFERTILIZER CONTAINING Azotobacter BACTERIA AND Pseudomonas fluorescents Indigenous FORMULATION OF ORGANIC COMPOS WITH VARIOUS SUBSITUTION MATERIALS ON RICE PRODUCTION SRI METHOD	AST-128
Rita Erlinda	Politeknik Pertanian Negeri Payakumbuh	The Test of Storage Time for Azotobacter Bacteria Isolate Formulation, Indigenous Pseudomonas fluorescents as Biofertilizer on the Number of Bacterial Colonies	AST-129
Yun Sondang	Food Crops Department, Politeknik Pertanian Negeri Payakumbuh	ISOLATION AND IDENTIFICATION OF EFFECTIVE MICROORGANISMS FROM WATER HYACINTH BIOFERTILIZERS	AST-130
Fardedi	Department of Water System of Agriculture , Politeknik Pertanian Negeri Payakumbuh	Trips (Thysanoptera: Thripidae) Population Monitoring At Mangosteen Planting Area	AST-131
Deswani Panggabean	Politeknik Pertanian Negeri Payakumbuh	Making Organic Fertilizers from Orok-oi ok (Crotalaria juncea.) as a nutrient for chicory (Brassica juncea.) that are grown fertigately	AST-132
Sri Nofianti	Politeknik Pertanian Negeri Payakumbuh	Effect of Breeder Knowledge Against Adoption of Artificial Insemination Technology	AST-133
Jaswandi	Faculty of Animal Science, Universitas Andalas	THE USE OF STRAW FOR INVITRO MATURATION OF CATTLE OOCYTES DURING TRANSPORTATION	AST-134
Made Deviani Duaja	Agriculture Faculty, Jambi University	REDUCE THE USE OF MINERAL FERTILIZERS IN CHINESE KALE (Brassica alboglabra Bailey)	AST-135
Anak Agung Ketut Darmadi	Biology Study Program Faculty of Mathematics and Natural Sciences Udayana University Bali-Indonesia	ANTIFUNGAL ACTIVITIES OF CINNAMON LEAF EXTRACTS AGAINST SIGATOKA FUNGUS (PSEUDOCERCOSPORA FIJIENSIS)	AST-136
			Energy
Firmansyah	Politeknik Negeri Sriwijaya	Study of the Supply Water Discharge at the Micro Hydro Power Installation in the Sarwan Village South Sumatera	Energy-01
Tresna Dewi	Politeknik Negeri Sriwijaya	ACTIVE AND PASSIVE COOLING COMPARISON OF PV PANELS APPLIED IN TROPICAL CITY; CASE STUDY PALEMBANG, SOUTH SUMATRA	Energy-02
Dentri Irtas	Politeknik Negeri Sriwijaya	The Effect of Electric Current on the Production of Brown's Gas using Hydrogen Fuel Generator with Seawater Electrolytes	Energy-03
Tri Hidayat	Politeknik Negeri Sriwijaya	Modification of Fuel Input on Oil Fuel Electric Generator to Gas Fuel Engine	Energy-04

AST-124

COMPATIBILITY OF SOME BACTERIA AS PESTICIDES AND BIOLOGICAL FERTILIZERS AND THE FORMULATIONS ON VARIOUS ORGANIC MATERIALS

Yulensri [1]*, Arneti[2], Noveri[3]

Department of Food Crops , Payakumbuh Agricultural Polytechnic, West Sumatera. *Jl. Raya Negara KM 7 Tanjung Pati, Telp. (0742) 7754192- (0752) 7750220* [2] Faculty of Agricultura, Andalas University, Indonesia 25163. [3] Department of Estate Crops, Payakumbuh Agricultural Polytechnic, West Sumatra. Indonesia. yulensri87@gmail.com

ABSTRACT—**The use of agricultural production facilities that are produced from non-renewable natural resources such as fertilizers and chemical pesticides is feared that it will disrupt environmental sustainability and reduce soil fertility and quality. The application of biotechnology derived from local resources is a very appropriate alternative to answer these challenges, such as the use of local microorganisms that act as pesticides and biological fertilizers. This research aims to determine the compatibility of the bacterium Bacillus cereus strain ATCC 14579, Bacillus subtillis subsp. subtilis strain 168 Bacillus siamensis strain KCTC13613, Azotobacter sp. and Pseudomonas fluorescens isolated from Local Microorganism of banana stembud (LMO) and the best formulation in organic matter. The study began in February to July 2019 in the Biology Laboratory of Payakumbuh Agricultural Polytechnic, with 2 stages, namely 1) testing the compatibility of bacteria in Tryptone Soya Agar (TSA) media with the dual culture method; 2) determined the bacterial formulations on three organic materials namely compost, peat soils and vermicompost in the form of 6 formulations and then counting the population of bacteria aged of 1, 5,10,15 and 20 days after inoculation. The study used a completely randomized design with 6 treatments and 3 replications. The data obtained were analyzed for variance (ANOVA) and continued with duncan test. The results showed that the five bacteria tested could grow together on TSA media so that they could be combined in one formulation. The three types of organic material can be used to formulate bacteria in which the total bacterial population in each formula tested meets the quality standards of Indonesia bio-fertilizers (SNI, bio-fertilizers). The most suitable organic material for successive formulations is peat soil, then vermicompost and compost.**

AST-125

ROLE OF BIO-LIQUID ORGANIC FERTILIZERS (BIO-LOF) ON SOIL FERTILITY AND NUTRIENTS UPTAKE ON MAIZE (*ZEA MAYS* L)

Kresna Murti [1)], Yulensri [2)] dan Misfit Putrina [3)]

Politeknik Pertanian Negeri Payakumbuh. E-mail: kresnamurti06@yahoo.com

ABSTRACT—**Biological organic fertilizers are growing rapidly due to the scarcity of inorganic fertilizers which causes the price of fertilizer to increase, the widespread acidity of the soil and the increasing demand for organic agricultural products. The fertilization constraints cause organic biofertilizers to develop rapidly. This study aims to determine the role of bio-LOF fertilizer on soil and nutrients uptake on Maize in the field, The design used is factorial randomized block design (RBD) with 3 replications, where the P factor (bio-LOF concentration) with 4 levels, namely P1 = without bio-LOF, P2 = bio-LOF concentration of 25%, P3 = bio-LOF concentration of 50%, and P4 = bio-LOF concentration of 75% ,.W factor (application time) with 3 levels, namely W1 = at the time of seeds treatment + planting time + age 3 weeks + age 6 weeks, W2 = at the time of seeds treatment + every week, W3 = at the time of seeds treatment + once 2 weeks, so there were 36 trial plot. The treatment by spraying on the soil and plants. The variables observed were EC, Eh, soil pH and nutrient uptake of N and P by Plants. Data were analyzed by variant (Anova) and continued with Duncan's test. The results showed there was no role of bio-LOF on EC, EH. The treatment of bio-LOF at the time of seeds treatment, at planting, at 3 weeks and 6 weeks can increase soil pH. The highest total N and P uptake of plants were found at 75% concentration treatment and repeated every 2 weeks.**

AST-126

APPLICATIONS OF VARIOUS TYPES AND DOSAGE OF BIO-COMPOSTS ON GINGER PLANT (*ZINGIBER OFFICINALE* L)

Misfit Putrina [1)], Yulensri [2)] dan Kresna Murti [3)]

Politeknik Pertanian Negeri Payakumbuh. E-mail: misfitputrina@yahoo.co.id

ABSTRACT—**The prospect of ginger in Indonesia is still quite good, especially for exports, the traditional medicine, the food and beverage industry. Increasing crop production using chemical fertilizers and pesticides is not a wise step, which recently has increased consumer pressure to get agricultural products free of pesticide residues and chemical fertilizers so that the product is safe for consumption and the creation of a healthy environment. The combination of organic fertilizer and biological fertilizer is one solution to answer this challenge. This study aims to determine the role of various types and doses of bio-compost on the ginger plant. The design factorial randomized block design (RBD) (4 x 3) with 3 replications, where Factor K (bio-compost type) with 4 levels, namely K1 = cattle manure bio-compost, K2 = tithonia bio-compost, K3 = straw bio-compost, and K4 = without bio-compost. Factor D (dosage) with 3 levels, namely D1 = 3 tons / Ha; D2 = 6 tons / Ha, D3 = 9 tons / Ha, so there were 36 experimental plots. Treatment at planting by inserting it into the planting hole. Observations were made at the age of 60 days after planting. The data obtained were analyzed for variance (Anova) and continued by duncan test. The results showed there was no effect of biocompost types and dosages on plant height and number of ginger tillers. This research continues until production.**

AST-127

POTENTIAL OF BACTERIA OF BANANA STEM BUD LOCAL MICRO ORGANISM (LMO) AS A BIO-FERTILIZER TO INCREASE THE GROWTH OF PADDY IN SRI METHOD

Noveri [1]*, Yulensri [2] dan Arneti [3]

[1] Department of Estate Crops, Payakumbuh Agricultural Polytechnic, West Sumatera. *Jl. Raya Negara KM 7 Tanjung Pati, Indonesia*
[2] Department of Food Crops , Payakumbuh Agricultural Polytechnic, West Sumatera. 3) Faculty of Agricultura, Andalas University, Indonesia 25163.
noverikoto2@yahoo.com