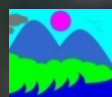




Feeding orangutans at the Satwa Taru Zoo, Solo, Indonesia; photo by Maulana Surya

Organized and
supported by



Selected manuscripts
will be available at

BIODIVERSITAS
Journal of Biological Diversity

NUSANTARA
BIOSCIENCE



International Conference on Biodiversity

Abs Soc Indon Biodiv
vol. 5 | no. 2 | pp. 29-42 | April 2017
ISSN: 2407-8069

ABSTRACT

INTERNATIONAL CONFERENCE ON BIODIVERSITY

SOCIETY FOR INDOONESIAN BIODIVERSITY

Surakarta, 7-8 April 2018



ABSTRACT

INTERNATIONAL CONFERENCE ON BIODIVERSITY

SOCIETY FOR INDONESIAN BIODIVERSITY

Surakarta, 7-8 April 2018

T H E M E :

**Indonesian Flag Species: Conservation of Big Mammals
in Indonesia**

SECRETARIAT ADDRESS

Sekretariat Masyarakat Biodiversitas Indonesia, Kantor Jurnal Biodiversitas, Jurusan Biologi, FMIPA UNS, Jl. Ir. Sutami 36A
Surakarta 57126, Jawa Tengah, Indonesia. Tel. +62-897-6655-281. Email: biodiversitas@gmail.com. Website:
biodiversitas.mipa.uns.ac.id/snmbi.html

Organized by



Selected manuscripts
will be available at

BIODIVERSITAS
Journal of Biological Diversity

**NUSANTARA
BIOSCIENCE**



THIS PAGE INTENTIONALLY LEFT BLANK

TIME SCHEDULE

International Conference on Biodiversity

Society for Indonesian Biodiversity (SIB)

Surakarta, Indonesia, 7-8 April 2018

TIME	ACTIVITIES	PERSON IN CHARGE	SITE
April 7, 2018			
07.30-08.00	Registration	Committee	Lobby
08.00-08.30	Opening ceremony	Chairman of the SIB	R1
08.30-09.00	Photo session and coffee break	Committee	R1, Lobby
09.00-10.00	Panel I	Moderator	R1
10.00-11.30	1. Dr. Jennifer Brousseau Panel II 2. Dr. Freddy Patiselanno 3. Dr. AYPBC Widyatmoko	Moderator	R1
11.30-13.00	Rest, prayer, lunch & Poster session	Committee	Lobby
13.00-15.00	Parallel presentation I		
	Group 1: AO-01 to BO-02	Moderator	R1
	Group 2: BO-03 to BO-09	Moderator	R2
	Group 3: BO-10 to DO-04	Moderator	R3
	Group 4: DO-05 to EO-06	Moderator	R4
15.00-15.15	Coffee break, prayer	Committee	Lobby
15.15-15.30	Announcement of the Best Presenters	Chairman of the Board of Assessors	R1
	Closing ceremony & other explanation	Chairman of the Committee	
April 8, 2017			
07.30- ...	City tour [optional]	Committee	Lobby

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

International Conference on Biodiversity

Society for Indonesian Biodiversity (SIB)

Surakarta, Indonesia, 7-8 April 2018

CODE	TITLE	AUTHOR(S)	PAGES
	Genetic diversity		
AO-01	Genetic polymorphism and in silico study epitope candidate Msp1 Block 2 Gene of <i>Plasmodium falciparum</i> isolate endemic area Jayapura, Papua	Arsyam Mawardi, Sony Suhandono, Azzania Fibriani, Fifi Fitriyah Masduki	29
AO-02	Cytochrome B mitochondrial DNA characteristic from non invasive samples of wild population Javan Banteng (<i>Bos javanicus</i> d'Alton, 1823)	Maryatul Qiptiyah, Satyawan Pudyatmoko, AYPBC Widyatmoko, Muhammad Ali Imron, ILG Nurtjahjaningsih	29
AO-03	Genetic diversity of <i>Amorphophallus titanum</i> in Bengkulu based on RAPD markers	Wahyudi Arianto, Ervizar A.M. Zuhud, Agus Hikmat, Tutut Sunarminto, Iskandar Z. Siregar	30
AO-04	Genetic variation of teak clones having contrasting early growth rates assessed by microsatellite markers	Asep Mulyadiana, Iskandar Z. Siregar, Trikoesoemaningtyas	30
AO-05	Diversity of flowering, morphological and agronomic characters of cassava clones in Lampung, Sumatra	Setyo Dwi Utomo, Erwin Yuliadi, Akari Edy, Kresna Shifa Usodri, Muhammad Jumadi, Vetty Pratiwy	30
AP-01	Phenotypic variation and genetic alteration of <i>Spathoglottis plicata</i> resulted from in vitro cultured seed irradiated with X-Ray	Suyitno Aloysius, Aziz Purwantoro, Kumala Dewi, Endang Semiarti	31
	Diversity of Species		
BO-01	Phylogenetic analysis of endophytic fungi from Malaysia accession of pegagan (<i>Centella asiatica</i>) base on ITS rDNA sequence	Nani Radiastuti, Hushshila A. Bahalwan, Dwi N. Susilowati	31
BO-02	Latent variable models for multi-species counts modeling in ecology	Riki Herliansyah, Irma Fitria	31
BO-03	Diversity of Ambrosia beetles on teak grown in monoculture and polyculture system in Malang District, East Java, Indonesia	Yogo Setiawan, Hagus Tarno, Rina Rachmawati	32

BO-04	The characteristic study of the vocal cord morphometric among the Dangdut Type and the Slow Type of Gaga's Chicken	Alfi Sophian, Pipih Suningsi Effendi, Abinawanto, , Titin Siswantining	32
BO-05	Environmental assessment of Garang Watershed, Central Java, Indonesia using phytoplankton biodiversity and water quality	Rizky Muliani Dwi Ujianti, Sutrisno Anggoro, Azis Nur Bambang, Frida Purwanti	32
BO-06	Dung beetle behavior and its role in stimulating tropical forest biodiversity	Bainah Sari Dewi, Sugeng P. Harianto, Shinsuke Koike	33
BO-07	Morphological variation among fifteen superior robusta coffee clones in Lampung, Indonesia	Sri Ramadiana, Dwi Hapsoro, Yusnita	33
BO-08	Exploration of hydrolytic enzymes-producing abilities of bacteria associated with wilting banana plants (<i>Musa</i> sp.)	Aulia Ardhi, Karina Cucha Ahmad, Hanita Novrianti, Nova Wahyu Pratiwi, Saryono	33
BO-09	Algal bloom events and its relation with eutrophication in Jakarta Bay Waters, Indonesia	Tumpak Sidabutar , Dietrieck G. Bengen, Sam Wouthuyzen, Tri Prartono	34
BO-10	Local orchids inventory in Mungku Baru Forest, Central Kalimantan, Indonesia	Siti Maimunah, Nurul Hidayati	34
BO-11	The diversity of indigenous natural enemies as biological control agents of the corn planthopper <i>Stenocranus pacificus</i> (Hemiptera: Delphacidae)	Novri Nelly, My Syahrawati, Hasmiandy Hamid	34
BP-01	Community structure of endophytic fungal on Malaysian accession of <i>Centella asiatica</i>	Dwi Ningsih Susilowati, Amelia Rakhmaniar, Nani Radiastuti	35
BP-02	Phylogenetic of clove (<i>Syzygium aromaticum</i>) based on chemical compounds	Syahrhan Wael, , Tri Rini Nuringtyas, Nastiti Wijayanti, Pudji Astuti	35
Diversity of Ecosystem			
CO-01	Growth and yield performance of several introduced and a local shallot variety (<i>Allium ascalonicum</i>) in Manokwari, West Papua	Saraswati Prabawardani , Meilany O. Setiawan, D. Wasgito Purnomo	36
CP-01	Climate variability adaptation using cropping calendar in rice production centers in Indonesia	Yayan Apriyana	36
Ethnobiology and Socioeconomics			
DO-01	Wattled Brushturkey bird poaching system in the Sigim and Sinaitousi communities in the buffer zone of the Arfak Mountain Reserve, West Papua, Indonesia	Hotlan Manik, Ruhyat Partasasmita, Johan Iskandar, Handarto, Indrawati Yudha Asmara, Husmy Yurmiaty	36
DO-02	The local management and sustainable system of swidden farming in Village of Bojongsalam and Sukaresmi, Upper Cisokan Watershed, West Java, Indonesia	Ira Robibatul Choir, Johan Iskandar, Parikesit, Ruhyat Partasasmita	37

DO-03	Exotic menu: threats to conservation of mammals in Papua	Freddy Pattiselanno, Johan F. Koibur	37
DO-04	Competitiveness and sustainability analysis of superior commodity in West Java, Indonesia	Yooce Yustiana, Achmad Sjarmidi, Mia Rosmiati, Ramadhani Eka Putra, Endang Hernawan, Tien Lastini, Angga Dwiartama	37
DO-05	Site selection and soil fertility management among Outer Baduy People in maintaining swidden cultivation productivity	Johan Iskandar, Budiawati S.Iskandar, Ruhyat Partasasmita	38
DO-06	The changes of the traditional home garden systems converted to the commercial homegarden systems: A case study in Sukapura Village of the upstream Citarum watershed, West Java, Indonesia	Juliati Prihatini, Johan Iskandar, Ruhyat Partasasmita	38
Bioscience			
EO-01	Potential of <i>Archidendron jiringa</i> by-product as an alternative source of tannin and saponin	Nur Hidayah, Suliasih	39
EO-02	Duodenum morphology of Male Layer Chicken (<i>Gallus gallus gallus</i>) after ethanolic extract treatment by <i>Anacardium occidentale</i> as a candidate for antibiotic growth promoter	Hendry T.S.S.G. Saragih, Elgio Venanda Ginting	39
EO-03	Land suitability analysis of shrimp pond land former in Bantul District, Yogyakarta, Indonesia using Geographic Information System	Sarah Afsholnissa, Endang Hernawan, Tien Lastini	40
EO-04	Effect of nodes position on the growth and yield of stem cutting of sambiloto (<i>Andrographis paniculata</i>)	Solikin	40
EO-05	Changes of defense-related enzymes activities of tomato to <i>Ralstonia syzygii</i> subsp. <i>indonesiensis</i> by indigenous endophytic <i>Bacillus</i> spp.	Yulmira Yanti, Warnita, Reflin, Chainur Rahman Nasution	40
EO-06	Phytoremediation of wastewater with <i>Echinodorus radicans</i> and <i>Sagittaria lancifolia</i> in Purwodadi Botanic Garden, Indonesia	Rony Irawanto	41
EP-01	Diversity of biofilm formation <i>Pseudomonas aeruginosa</i> from clinical isolates and antibiotic susceptibility	Didik Wahyudi, Abu Tholib Aman, Niken Satuti Nur Handayani, Endang Sutariningsih Soetarto	41
EP-02	Antibiofilm activities of extract <i>Mimosa pudica</i> against expression of intercellular adhesion (ica) A of <i>Staphylococcus aureus</i> subsp. <i>aureus</i>	Bq. Mutmainnah, Supnawadi, Ni'matuzahroh	42
EP-03	Feeding the diets containing the different levels of fermented rice bran for jelawat, <i>Leptobarbus hoevenii</i>	Hendry Yanto, Junianto, Rita Rostika, Yuli Andriani, Ujang Hidayat Tanuwiria	42

Note: A. Genetic Diversity, B. Diversity of Species, C. Diversity of Ecosystem, D. Ethnobiology and Socioeconomics, E. Bioscience (Life Science and Technology); O. Oral, P. Poster; AA. Keynote speech

THIS PAGE INTENTIONALLY LEFT BLANK

ABSTRACT

International Conference on Biodiversity Society for Indonesian Biodiversity (SIB) Surakarta, Indonesia, 7-8 April 2018

Genetic diversity

AO-01

Genetic polymorphism and in silico study epitope candidate Msp1 Block 2 Gene of *Plasmodium falciparum* isolate endemic area Jayapura, Papua

Arsyam Mawardi^{1,✉}, Sony Suhandono¹, Azzania Fibriani¹, Fifi Fitriyah Masduki²

¹Research Group Genetics and Molecular Biotechnology, School of Life Sciences and Technology, Institut Teknologi Bandung. Labtek XI SITH-ITB, Jl. Ganesa 10, Lebak Siliwangi, Coblong, Bandung 40132, West Java, Indonesia

²Biochemistry Research Group, Faculty of Mathematics and Natural Sciences, Institut Teknologi Bandung. Jl. Ganesa 10, Lebak Siliwangi, Coblong, Bandung 40132, West Java, Indonesia

Malaria is an infectious disease which has high prevalence in Jayapura, Papua, Indonesia. The vaccine that is currently being developed has not been effective in overcoming malaria, due to the high polymorphism *Plasmodium* surface proteins. MSP1 *Plasmodium falciparum* is a surface protein that plays a role in the invasion process in erythrocytes. MSP1 can be predicted by a specific epitope antigen for the development of malaria vaccine. Therefore the aim of this study is to analyze allele polymorphism and to detect MSP1 antigen block 2 *P. falciparum*. The block 2 MSP1 gene was amplified using PCR method, cloned using pGEM-T easy vector then transformed to TOP'10 E.coli. Target DNA was confirmed by PCR colonies and DNA sequencing methods. A total of 15 patient samples have been isolated from *Plasmodium* DNA. The PCR amplification reveals the target gene size about ± 1049 bp. Alignment analysis showed the MSP1 block 2 genes were

distributed in four different alleles, K1(7), MAD20(1), RO33(0) and MSP1_Jayapura(10). The most commonly appears of allele detection is MSP1_Jayapura. There was significant association between symptomatic sign and allele variation ($U < 0.05$). In silico study reveals that there is a new epitope antigen candidate from the MSP1_Jayapura allele length 17 amino acid.

Epitope candidate, in silico analysis, MSP1, *Plasmodium falciparum*, polymorphism

AO-02

Cytochrome B mitochondrial DNA characteristic from non invasive samples of wild population Javan Banteng (*Bos javanicus* d'Alton, 1823)

Maryatul Qiptiyah^{1,3,✉}, Satyawan Pudyatmoko², AYPBC Widyatmoko³, Muhammad Ali Imron², ILG Nurtjahjaningsih³

¹Faculty of Forestry, Universitas Gadjah Mada. Jl. Agro No. 1, Bulaksumur, Sleman 55281, Yogyakarta

²Center for Biotechnology and Tree Improvement Research. Jl. Palagan Tentara Pelajar Km 15, Purwobinangun, Pakem, Sleman 55582, Yogyakarta

Javan banteng (*Bos javanicus javanicus*) is one of the protected big mammals in Indonesia, due to the declining of its population. The main population of Javan banteng is currently in Ujung Kulon National Park (TNUK), Alas Purwo National Park (TNAP), Meru Betiri National Park (TNMB) and Baluran National Park (TNB). These four remaining populations are fragmented with wide geographical distances. Population reduction and fragmentation between populations can promote depletion of genetic characteristics. This study aims to examine the genetic characteristics of Javan banteng based on cytochrome b region of mitochondrial DNA. Genetic material samples were obtained by the non-invasive method (feces). This study revealed that the genetic distance of Javan banteng between TNUK, TNAP, and TNB were 0, while the genetic distance between all of

Note: In order to avoid improper conduct of third parties against authors by using email addresses, starting on 2018 correspondence emails (✉) are not listed. Colleagues can communicate with the author by mail or contact us at biodiversity@gmail.com

these three populations with TNMB were 0.005. Moreover, the population of TNMB has only one haplotype that does not exist in other populations. Javan banteng (*Bos javanicus javanicus*) has a low genetic distance with *Bos javanicus lowi* (0.030-0.035) and *Bos javanicus birmanicus* (0.047-0.053). Based on these results, there should be caution in conducting genetic infusion of Javan banteng in natural populations, especially in Meru Betiri National Park.

Fecal, genetic network, national park, haplotype

AO-03

Genetic diversity of *Amorphophallus titanum* in Bengkulu based on RAPD markers

Wahyudi Arianto¹✉, Ervival A.M. Zuhud², Agus Hikmat²,
Tutut Sunarminto³, Iskandar Z. Siregar³

¹Department Forestry, Universitas Bengkulu. Jl. WR Supratman, Kota Bengkulu 38122, Indonesia

²Department of Conservation, Faculty of Forestry, Institut Pertanian Bogor. Jl. Ulin, Kampus IPB Dramaga, Bogor 16680, West Java, Indonesia

³Department of Silviculture, Faculty of Forestry, Institut Pertanian Bogor. Jl. Ulin, Kampus IPB Dramaga, Bogor 16680, West Java, Indonesia

Titan arum (*Amorphophallus titanum* (Becc.) Becc. ex Arcang) is the tallest flower in the world, this species is endemic in Sumatra. The present research is aimed to identify genetic diversity of 3 populations of *A. titanum* from Bengkulu (consisted of 22 accessions) using random amplified polymorphic DNA (RAPD). The result showed that genetic diversity (H_e) within a population of Titan Arum (*A. titanum*) was moderate ($H_e = 0.16-0.24$), while genetic differentiation was found also to be moderate with G_{ST} value of 0.1567. The highest genetic variation was found in Air Selimang population ($H_e = 0.24$) while the lowest was detected in Tebat Monok Population. The Closest genetic distance (Nei Distance) was observed between Air Selimang and Tebat Monok population with a value of 0.0513, while the greatest distance was found between Air Selimang and Palak Siring with a value of 0.0932. Based on the result of software STRUCTURE, twenty-two population Titan Arum are divided into three clusters

Amorphophallus titanum, genetic diversity, RAPD

AO-04

Genetic variation of teak clones having contrasting early growth rates assessed by microsatellite markers

Asep Mulyadiana¹✉, Iskandar Z. Siregar¹,
Trikoesoemaningtyas²

¹Department of Silviculture, Faculty of Forestry, Institut Pertanian Bogor. Jl. Ulin, Kampus IPB Dramaga, Bogor 16680, West Java, Indonesia

²Faculty of Agriculture, Institut Pertanian Bogor. Kampus IPB Darmaga, Jl. Meranti, Babakan, Dramaga, Bogor 16680, West Java, Indonesia

Teak (*Tectona grandis* Linn. f.) is one of the commercial tree species grown in plantation forest in Indonesia. Eleven polymorphic microsatellite markers were analyzed to determine the genetic variation and genetic structure of populations between fast-growing population and slow growing population. A total of 53 alleles were found, with five and nine alleles being unique in the fast-growing and the slow-growing populations, respectively. The level of gene diversity was similar between the fast-growing population ($H_e = 0.557$) and the slow-growing population ($H_e = 0.587$). Inbreeding coefficients in the fast-growing populations were negative and not significantly different from zero, indicating no deviation in Hardy-Weinberg equilibrium. Otherwise, the slow-growing populations showed a significantly positive inbreeding coefficient, indicating excessive inbreeding and self-fertilization. The population genetic structure revealed four distinct groups. The results of this study are essential for developing effective conservation schemes as well as for providing basic data for future tree breeding purposes of plantations.

Clone, conservation, genetic variation, microsatellite, *Tectona grandis*

AO-05

Diversity of flowering, morphological and agronomic characters of cassava clones in Lampung, Sumatra

Setyo Dwi Utomo[✉], Erwin Yuliadi, Akari Edy, Kresna Shifa Usodri, Muhammad Jumadi, Vetty Pratiwy

Faculty of Agriculture, Universitas Lampung. Jl. Sumantri Brodjonegoro No. 1, Bandar Lampung 35145, Lampung, Indonesia

To develop superior cultivars/clones of cassava (*Manihot esculenta*), sexual hybridization is required to generate highly diverse population. The objectives of this study were (i) to evaluate the variation in flowering of cassava clones as parents; and (ii) to evaluate the variation in growth rate and morphology of F1 half-sib population. Random natural sexual hybridization of 40 cassava clones was conducted in highland of Sekincau (1136 m asl), West Lampung in 2015-2017. At 6 months after planting, reproductive branches, flowers, and fruits were observed in all clones; the lowest percentage of plants producing reproductive branches, flowers, and fruits were 32%, 20%, and 12.5% respectively. This demonstrated that sexual hybridization among cassava clones should be effective in highland Sekincau. The harvested botanical seeds were germinated and grown on soil media (10 kg polybag) on 12 December 2015; ≤ 20 seeds derived from female parent per polybag. Growth rate is the number of seeds growing divided by the number of seeds planted; observed at 12 days after planting. The growth rate of F1 seed harvested from 81 clones was 58% and tend to increase when the

seeds were planted after 87 days after harvesting. The stem cutting from the seedling of F1 seed were planted in unreplicated experiment Bandar Lampung from April 2016 to March 2017. The degree of variation of was estimated on eight F1 half-sib populations. The color of apical leaves, abaxial petiole color, and adaxial petiole color showed mostly high degree of variation in five F1 half-sib population. The characters number of leaf lobes, length of leaf lobe, width of leaf lobe, ratio of lobe length to lobe width of central lobe, and petiole length showed high degree of variation in eight F1 population. The degree of variation of starch rendement was high in F1 population derived from BL 5-1, CMM 25-27-145, and Mulyo. Selection for starch rendement in the three population should be effective in the three populations.

Botanical seeds, diversity, growth rate, *Manihot esculenta*, sexual hybridization

AP-01

Phenotypic variation and genetic alteration of *Spathoglottis plicata* resulted from in vitro cultured seed irradiated with X-Ray

Suyitno Aloysius^{1,✉}, Aziz Purwantoro², Kumala Dewi³, Endang Semiarti³

¹Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Negeri Yogyakarta. Jl. Colombo No.1, Caturtunggal, Depok, Sleman 55281, Yogyakarta, Indonesia

²Faculty of Agriculture, Universitas Gadjah Mada. Jl. Flora, Bulaksumur, Sleman 55281, Yogyakarta, Indonesia

³Faculty of Biology, Universitas Gadjah Mada. Jl. Teknik Selatan, Sekip Utara, Sleman 55281, Yogyakarta, Indonesia

The purpose of this study is to identify the phenotypic variation and genetic alteration of *Spathoglottis plicata* Bl. resulted from in vitro cultured seed irradiated with X-ray. The development of *S. plicata* through mutation induction is necessary to conduct since its diversity is still low. Radiation was given at the doses of 0; 6; 12; 18 and 24 rad. The samples were survived plants resulted from irradiated seeds. Phenotypic variations observed were the number, length and width of leaf, number of tiller, and flower characteristics. Genetic alteration was detected from POH1 homolog DNA transcript nucleotides, a key gene determining of shoot morphogenesis. Results show that there are variations of leaf color, length and width of leaf, and the number of tillers. Plants start to flower at the age of 30 months. The plants flowering reach 64.7% (WT), 50.0% (6 rad), 33.3% (12 rad), 33.3% (18 rad), and 40% (24 rad). Flower color is graded from white, white slightly purple, purplish white, light purple, reddish purple and purple, found both in mutants and wildtype groups. The alignment result of POH1 homolog DNA transcripts (cDNA) show the nucleotide differences at some points that indicate the occurrence of DNA changes or gene mutations.

Genetic alteration, phenotypic variation, POH1 homolog gene, *Spathoglottis plicata*, X-ray

Diversity of Species

BO-01

Phylogenetic analysis of endophytic fungi from Malaysia accession of pegagan (*Centella asiatica*) base on ITS rDNA sequence

Nani Radiastuti^{1,✉}, Hushshila A. Bahalwan¹, Dwi N. Susilowati²

¹Program of Biology, Faculty of Science and Technology, UIN Syarif Hidayatullah Jakarta. Jl. Ir. H. Djuanda No. 95, Ciputat, Tangerang Selatan 15412, Banten, Indonesia

²Indonesian Center for Agricultural Biotechnology and Genetic Resources Research and Development. Jl. Tentara Pelajar 3A, Cimanggu, Bogor 16111, West Java, Indonesia

Centella asiatica (L.) Urb.) as a medicinal plant, is known to be symbiotic with various endophytic fungi. The purpose of this research was to found diversity of fungal endophyte culturable from *C. asiatica* Malaysian accession. The identification used phylogenetic analysis of maximum parsimony (MP) by PAUP 4.0b10. The analysis of the phylogenetic tree based on ITS rDNA. The result showed that obtained 85 isolates endophytic fungi (33 isolates from stolons, 24 isolates from leaves, 17 isolates from roots, and 11 isolates from petioles) were grouped into 23 morphotaxa. *Fusarium* (Nectriaceae) were the most found of fungal endophytes in the *C. asiatica* Malaysian accession (23 isolates). Several fungal endophytic were identified as *Aspergillus oryzae*, *Ceratobasidium* sp., *Colletotrichum karstii*, *C. siamense*, *C. tabaci*, *C. gigasporum*, *Chaetomium globosum*, *Eutypella* sp., *Fusarium solani*, *F. falciforme*, *F. striatum*, *Fusarium* sp., *Guignardia mangiferae*, *Trametes* sp., *Perenniporia corticola*, *Phanerochaete stereoides*, *Penicillium capsulatum*, *Phomopsis asparagi*, *Peroneutypa scoparia*, and *Talaromyces* sp.

Centella asiatica, endophytic fungi, phylogenetic tree

BO-02

Latent variable models for multi-species counts modeling in ecology

Riki Herliansyah[✉], Irma Fitria

Department of Mathematics, Institut Teknologi Kalimantan. Jl. Sukarno Hatta Km 15, Karang Joang, Balikpapan 76127, East Kalimantan, Indonesia

High-dimensional multi-species counts are often collected in ecology to understand the spatial distribution over different locations and to study effects of environmental changes. Modeling multivariate abundance is challenging as we need to consider the possibility of interactions across species. Latent variable models are the recent popular approach in statistical ecology to address such issue that has a similar framework to ordinary regression models. In this paper, we employ the Poisson distribution for

modeling count responses and a negative binomial distribution for more frequent zeros in observations. The implementation of a latent variable model, Generalized Linear Latent Variable Models (GLLVMs), is demonstrated on multi-species counts of endemic bird species collected in three different habitat structures in North Kalimantan, Indonesia. The main objectives are to study the effect of logging activities on abundance of endemic species and their interactions and to observe the habitat preference of certain species. Our results found that out of four endemic species, only *Alophoixus bres* (Lesson, 1832) was significantly affected by logging activities. The sign of parameter was negative indicating the logging activities in 1989 and 1993 significantly reduce the number of *Alophoixus bres* species and preferring primary forest as its habitat.

Endemic species, latent variable, multi-species counts

BO-03

Diversity of Ambrosia beetles on teak grown in monoculture and polyculture system in Malang District, East Java, Indonesia

Yogo Setiawan[✉], Hagus Tarno, Rina Rachmawati

Faculty of Agriculture, Universitas Brawijaya. Jl. Veteran, Ketawanggede, Lowokwaru, Kota Malang 65145, East Java, Indonesia

Ambrosia Beetle plays an important role in temperate forest. Ambrosia beetle lives symbiotically with fungi that can cause plant wilt and die. Ambrosia beetle has been reported to attack teak (*Tectona grandis* Linn. f.) plants in Malang District, East Java, Indonesia. The aim of this research is to study the diversity of ambrosia beetle in monoculture and polyculture teak plant in Malang. The research was conducted in teak forest in Dampit and Sumbermanjing Wetan, Malang District on March to May 2017. Each location of the observations was made into two plots. Each plot was set up 10 traps, and the distance between the trap was approximately 20 m. Ambrosia beetle was collected using a bottles trap baited with ethanol 95% that tied up in teak plants. Samples were taken 8 times with 3 days interval a month. Identification of ambrosia beetles was based on morphological characters. The data of ambrosia beetles were analyzed using Vegan package in R programme to calculate the Shannon-Winner diversity index (H), Pielou's evenness index (E), Simpson's dominance index (D). The results showed that ambrosia beetles were trapped in monoculture and polyculture teak plants consist of 13 species, i.e., *Xylosandrus crassiusculus*, *X. morigerus*, *X. compactus*, *Xyleborus* sp.1, *Xyleborus* sp.2, *Euwallacea* sp., *Xyleborinus* sp., *Premnobius* sp., *Ambrosiodmus* sp., *Hypothenemus* sp.1, *Hypothenemus* sp.2, *Hypothenemus* sp.3, and *Hypothenemus* sp.4. Ambrosia beetles in polyculture had higher diversity ($H' = 1.472$) than in monoculture ($H' = 1.310$), there were in medium diversity category. The Pielou's evenness index of Ambrosia beetles in polyculture ($E = 0.592$) and monoculture ($E = 0.673$) that were in

medium category. The dominant species in polyculture ($D = 0.673$) and monoculture ($D = 0.615$) was *X. crassiusculus*.

Ambrosia beetles, diversity, teak forest, *Tectona grandis*

BO-04

The characteristic study of the vocal cord morphometric among the Dangdut Type and the Slow Type of Gaga's Chicken

Alfi Sophian¹, Pipih Suningsi Effendi², Abinawanto^{1,✉}, Titin Siswantining¹

¹Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Indonesia. Jl. Lingkar Kampus UI, Depok 16424, West Java, Indonesia

²Laboratory of Genetics, Faculty of Animal Husbandry, Institut Pertanian Bogor. Jl. Agatis, Kampus IPB Darmaga, Bogor 16680, West Java, Indonesia

Gaga's chicken is one of the ornamental chicken originating from Sidendreg and Rapang (South Sulawesi, Indonesia). Gaga's chicken has a unique crowing sound, like people laugh. Gaga's chicken which has a long and fast crowing sound known as the dangdut type, while those with short and slow crowing sound are known as slow type. Study was conducted in Pinrang (South Sulawesi), as one of the pure strains are located. Samples were collected from Kanie, Bullo, Macege, Rappang, and Sidenreng. The purpose of study was to determine the characteristics of the vocal cord morphometric among the dangdut type and the slow type of Gaga's chicken. All of the morphometric data were recorded and analyzed by Mean Test, using SPSS (version 22). The results showed that there were not significantly different ($\alpha = 0.010$) among the dangdut type and the slow type based on syrinx morphometric. While, according to the trachea muscle morphometric, so, there were shown that the trachea muscle of dangdut type longer than the slow type ($\alpha < 0.010$). In addition, either the right or the left of trachea muscle of dangdut type longer than either the right or the left of trachea muscle of the slow type ($\alpha < 0.010$).

Dangdut type, gaga chicken, slow type, vocal cord, morphometric

BO-05

Environmental assessment of Garang Watershed, Central Java, Indonesia using phytoplankton biodiversity and water quality

Rizky Muliani Dwi Ujianti^{1,3,✉}, Sutrisno Anggoro², Azis Nur Bambang², Frida Purwanti²

¹Program of Coastal Resources Management, Universitas Diponegoro. Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Central Java, Indonesia

²Faculty of Fisheries and Marine Science, Universitas Diponegoro. Jl. Prof. Soedharto, SH, Tembalang, Semarang 50275, Central Java, Indonesia

³Departement of Food Technology, Faculty of Engineering and

Informatics, Universitas PGRI University. Jl. Sidodadi Timur 24. Dr. Cipto Semarang, Central Java, Indonesia

Phytoplankton can be used as indicator of waters environment quality in watershed area. This research was conducted in Garang Watershed, Central Java, Indonesia. The aims of this research studied the environmental assessment of Garang Watershed using phytoplankton diversity and their relationship of waters quality. Sampling location based on the Governor Regulation of Central Java Provincial No. 156/2010 about segmentation of Garang Watershed. Sampling techniques in Garang Watershed using Plankton net no. 25 was used for phytoplankton collection. Varies phytoplankton density at the range of 13-53 ind/L. Number of species in the range of 4-8. Diversity index in the range 1.07-2.06. Phytoplankton stabilization was moderate while phytoplankton evenness was spread. Water quality index in this research is Phosphate, $\text{NO}_3\text{-N}$, $\text{NH}_3\text{-N}$, $\text{NO}_2\text{-N}$, and Fe. They are relationship between Phytoplankton and water quality to maintenance good condition in Garang Watershed.

Biodiversity, plankton, river, water quality, watershed

BO-06

Dung beetle behavior and its role in stimulating tropical forest biodiversity

Bainah Sari Dewi^{1,2,*}, Sugeng P. Harianto², Shinsuke Koike³

¹Research and Development Centre of Tropical Biodiversity, Universitas Lampung. Jl. Sumantri Brodjonegoro No. 1, Bandar Lampung 35145, Lampung, Indonesia

²Department of Forestry, Faculty of Agriculture, Universitas Lampung. Jl. Sumantri Brodjonegoro No. 1, Bandar Lampung 35145, Lampung, Indonesia

³Tokyo University of Agriculture and Technology. Tokyo, Japan

Dung beetles feed on the feces of animals in the forest, carrying the contents of the feces under the surface of the soil to be stored as stock of dung beetle feed as well as saving the seeds that are inside the feces of the animals. Under suitable environmental conditions, the seeds that are saved dung beetle will grow as seedling enriching the biodiversity of trees in the forest. This research needs to be done because it is still a few research on biodiversity dung beetle in Indonesia and this research is the first research in Lampung Province, Indonesia. The purpose of this research is to investigate biodiversity of dung beetle. The research site was conducted at the arboretum of Lampung University (2011-2018), and at Wan Abdul Rachman Forest Park, Lampung Province of Indonesia (2017-2018). The research method using traps method at two locations namely University of Lampung arboretum and Wan Abdul Rachman Forest Park. The results of the study have been found eight species of dung beetle (identified) and two species have not been identified. Dung beetle is already having an important role as secondary seed dispersal. This role is directly related to the availability of seed banks in the forest. Further research is needed in relation to the

ecology and physiology of dung beetles on different soil hardness.

Arboretum, dung beetle, University of Lampung, Wan Abdul Rachman

BO-07

Morphological variation among fifteen superior robusta coffee clones in Lampung, Indonesia

Sri Ramadiana^{*}, Dwi Hapsoro, Yusnita

Faculty of Agriculture, Universitas Lampung. Jl. Sumantri Brodjonegoro No. 1, Bandar Lampung 35145, Lampung, Indonesia

This study was aimed to characterize morphological variation among fifteen superior robusta coffee (*Coffea canephora* Pierre ex A Froehner) clones in Lampung Province. The fifteen clones observed consisted of four clones released by Indonesian Coffee and Cocoa Research Institute (ICCRI), i.e., 'BP 409', 'BP936', 'BP939', 'SA 237' and eleven superior coffee clones selected by farmers from Tanggamus District (Tugino, Siswanto, Biyadi, Komari, Wardi, Wanto) and from West Lampung district (Tugu Kuning, Tugu Hijau, Tugu Biru, Tugu Sari, Lengkon). The morphological characterization was evaluated on the basis of fifteen qualitative characters and seven quantitative characters, in a randomized complete block design, using three replicates for each clones. The results showed that there were some similarities and differences in morphological characters among the fifteen coffee clones. The similarities were found in some qualitative morphological characters, i.e., shapes of leaf base and leaf tip, petiole colors, leaf venation patterns, fruit disk shapes, ripe-fruit colors and stipule shapes, while variation was observed in shape of leaf lamina (elliptical vs. lanceolate), fruit shapes (round vs. oval) and shape leaf margins. Morphological variation were also observed in some quantitative characters, namely canopy diameters, tallness of the tree, stem diameters, leaf lengths, leaf widths, petiole lengths, stipule lengths and number of primary branches.

Morphology, robusta, superior clones, variability

BO-08

Exploration of hydrolytic enzymes-producing abilities of bacteria associated with wilting banana plants (*Musa* sp.)

Aulia Ardhi¹, Karina Cucha Ahmad², Hanita Novrianti², Nova Wahyu Pratiwi^{3,*}, Saryono²

¹Department of Food and Agricultural Product Technology, Faculty of Agricultural Technology, Universitas Gadjah Mada. Jl. Flora, Bulaksumur, Sleman 55281, Yogyakarta, Indonesia

²Department of Chemistry, Faculty of Mathematics and Natural Sciences, Universitas Riau. Jl. Simpang Baru, Tampan, Pekanbaru 28293, Riau, Indonesia

³Department of Biology, Faculty of Mathematics and Natural Sciences

Universitas Riau. Jl. Simpang Baru, Tampan, Pekanbaru 28293, Riau, Indonesia

Banana (*Musa* sp.) is one of the horticulture plants that generate high economic value. Banana plants contain many nutrients so that microbes can grow and attack the plants to cause wilting disease. Bacteria growing on the stumps and soil around banana plants are able to produce hydrolytic enzymes. The purpose of this study was to determine the ability of bacteria isolated from stumps and soil of wilting banana plants in producing hydrolytic enzymes such as cellulase, inulinase, amylase, and protease. Confirmation test of hydrolytic enzymes-producing ability was conducted by inoculating bacterial culture into media containing CMC, inulin, starch, and skim milk using paper disc diffusion method. From the subculture results, 9 genera of bacteria, i.e., *Xanthomonas*, *Erwinia*, *Pseudomonas*, *Proteus*, *Ralstonia*, *Escherichia*, *Staphylococcus*, *Caulobacter*, and *Neisseria* were found. As much as 40 isolates indicated the ability to degrade amylum, 39 isolates to degrade cellulose, 34 isolates to degrade inulin, and 17 isolates to degrade protein. Each of the highest ratios was found in the genus of *Neisseria* sp. which produced a cellulase enzyme; *Xanthomonas* sp. produced inulinase; *Erwinia* sp. produced amylase, and *Xanthomonas* sp. produced protease with value of 4,4; 3,9; 3,8; and 4,37 respectively.

Bacteria, banana plants, enzyme, hydrolytic, wilting

BO-09

Algal bloom events and it's relation with eutrophication in Jakarta Bay Waters, Indonesia

Tumpak Sidabutar^{1,✉}, Dietrich G. Bengen², Sam Wouthuyzen¹, Tri Prartono²

¹Research Centre for Oceanography, Indonesian Institute of Sciences. Jl. Pasir Putih 1, Ancol Timur Jakarta Utara 14430, Jakarta

²Faculty of Fisheries, Institut Pertanian Bogor. Kampus IPB Dramaga, Bogor 16680, Jawa Barat

The occurrence of algal blooms, distribution, duration, harmful effect, have been increased in Jakarta Bay, recently. Most of the bloom events often reoccurred in the dry season or after rainy season. Research aims to study causative species of blooming and the possible correlation between eutrophication with algal bloom in Jakarta Bay. The study was conducted in dry seasons 2008, 2009, 2010, 2011, 2013 and 2015. Samples were taken using a 20 µm canonical plankton-net, 125 cm in length and 30 cm mouth diameter. The results showed the abundance of phytoplankton ranged from 20.20 x10⁶ cells.m⁻³ up to 20.61 x10⁸ cells.m⁻³. It was observed the correlation between eutrophication of the bay and blooms event. The nitrogen and phosphor acted as the key factors to stimulate phytoplankton growth. The N/P ratio along the study ranged from 0.3-22.1. The nitrogen acted as triggering factor, while phosphate as limiting factor for the growth of phytoplankton. It was identified the most common species

of algal bloom in dry season such as *Skeletonema*, *Chaetoceros*, and *Thalassiosira*. They belong to the group of diatom as organisms that frequently responsible in the incidents of fish kills during blooms event in Jakarta Bay.

Algal bloom, causative species, eutrophication, N/P ratio

BO-10

Local orchids inventory in Mungku Baru Forest, Central Kalimantan, Indonesia

Siti Maimunah^{1,✉}, Nurul Hidayati²

¹Program of Forestry, Faculty of Agriculture and Forestry, Universitas Muhammadiyah Palangkaraya. Jl. RTA Milono Km 1,5, Langkai, Pahandut, Kota Palangka Raya 73111, Kalimantan Tengah

²Program of Agrotechnology, Faculty of Agriculture and Forestry, Universitas Muhammadiyah Palangkaraya. Jl. RTA Milono Km 1,5, Langkai, Pahandut, Kota Palangka Raya 73111, Kalimantan Tengah

Heath forest is mega biodiversity like a transition forest from low land forest to swamp forest include many plant and wild animal. This forest content clay to flood with sandy soil and very high density of vegetation with very slow growing and there are many epiphytes like orchids. Orchid is one of non timber forest product potential for forest community for ornamental plant with a high value by cultivation system to sale it. The aim of this research was to know species of orchid, to clustering the orchids and evacuation orchid from the damaged forest in heath forest of Mungku Baru, Central Kalimantan. The research location was done in 2 different area with the same habitat for repetition with transect model for 30 ha sampling area representative for 1.500 ha with census method. The result is heath forest in Mungku Baru have many species of orchid than low land forest or peatland forest near this area. There are 21 genera and separated in 82 species in clustering area depend on photoperiodic system. The largest species is 30 species of genus *Bulbophyllum* and 24 species of genus *Dendrobium*. Dominant species in low shading area is *Grammatophyllum* spp., medium shading area is *Coleogyne peltata*, and high shading area is *Bulbophyllum anceps*, and there are 3 species of sandy soil. The species of tree for orchid habitat is not a special thing, but the species of orchid only need more shading to live. This is earlier research for orchid in this area to get some accurate database of orchid biodiversity Mungku Baru.

Heath forest, local orchid, Mungku Baru, Central Kalimantan

BO-11

The diversity of indigenous natural enemies as biological control agents of the corn planthopper *Stenocranus pacificus* (Hemiptera: Delphacidae)

Novri Nelly[✉], My Syahrawati, Hasmiandy Hamid

Departement Plant Protection, Faculty of Agriculture, Universitas Andalas.
Kampus Unand Limau Manis, Padang 25163, West Sumatra, Indonesia

The corn planthopper *Stenocranus pacificus* Kirkaldy (Hemiptera: Delphacidae) is one of the pests of corn, in recent years have high population in some regions in Indonesia. Observations the aim to find the natural enemies of this pest has been done in the area of West Sumatra. Observation methods performed in accordance with natural enemies to be observed; predators and parasitoids are observed directly using vacuum, entomopathogen is isolated from the rhizosphere around rooting and from the corn plant part as an endophytic entomopathogen. Observations were made on monoculture corn (only corn), polyculture (corn and palm), palm replanting (former palm oil plantation with newly re-planted palm oil). Observations found that a variety of predators and parasitoids are natural enemies, at each location with different levels of diversity. The identification of the Order which is a natural enemy is Hymenoptera, Coleoptera, and Araneae. The results of fungi isolation from the location of corn plantation found *Metarizium anisopliae*, *Beauveria bassiana*, and *Aspergillus* sp. The diversity of the fungi found was also influenced by the condition of corn crops; polyculture, monoculture, and replanting. It can be concluded that the corn planthopper *S. pacificus* has a native natural enemy in the field that has the potential to be developed as a biological control agent. Application of this biological agents can be introduced to the corn crop, then also augmentation either inundation or inoculation.

Biological control, corn, natural enemies, *Stenocranus pacificus*

BP-01

Community structure of endophytic fungal on Malaysian accession of *Centella asiatica*

Dwi Ningsih Susilowati^{1,✉}, Amelia Rakhmaniar², Nani Radiastuti³

¹Indonesian Center for Agricultural Biotechnology and Genetic Resources Research and Development. Jl. Tentara Pelajar 3A, Cimanggu, Bogor 16111, West Java, Indonesia

²Program of Biology, Faculty of Science and Technology, UIN Syarif Hidayatullah Jakarta. Jl. Ir. H. Djuanda No. 95, Ciputat, Tangerang Selatan 15412, Banten, Indonesia

Endophytic fungi have mutual symbiotic with medicinal plant such as Malaysia accession of pegagan (*Centella asiatica* (L.) Urb.). The community structure of endophytic fungi in plants is significantly related to plant morphology, organ and species host plants. The research aimed to observe the species composition, the diversity and species dominance value of endophytic fungi in various organs of pegagan from Malaysia accession. The analyzed based on colonization rate (CR), diversity index (H'), dominance (D), frequency relative index (Fr) and UPGMA (Unweighted Pair Group Method with Arithmetic

Averages) and the analysis method using Jaccard's Coefficient. Total 78 isolates were isolated and clustered into 22 morphotypes, consist of Ascomycota and Basidiomycota divisions. The diversity index showed medium category with the highest result (H'= 1.91) in roots, followed by leaves 1.79, stolons 1.56 and petioles 1.29. There were *Ceratobasidium* sp., *Colletotrichum* sp., *Colletotrichum destructivum* and *Fusarium solani* as the dominant species. The community structure of endophytic fungi has variation in each plant organ of pegagan Malaysia accession which is expressed by the similarity index (IS) <0.091. Endophytic fungi have mutual symbiotic with medicinal plant such as pegagan Malaysian accession. The community structure of endophytic fungi in plants is significantly related to plant morphology, organ and species host plants. The research aimed to observe the species composition, the diversity and species dominance value of endophytic fungi in various organs of pegagan from Malaysia accession. The analyzed based on colonization rate (CR), diversity index (H'), dominance (D), frequency relative index (Fr) and UPGMA and the analysis method using Jaccard's Coefficient. Total 78 isolates were isolated and clustered into 22 morphotypes, consist of Ascomycota and Basidiomycota divisions. The diversity index showed medium category with the highest result (H'= 1.91) in roots, followed by leaves 1.79, stolons 1.56 and petioles 1.29. There were *Ceratobasidium* sp., *Colletotrichum* sp., *C. destructivum* and *F. solani* as the dominant species. The community structure of endophytic fungi has variation in each plant organ of pegagan Malaysian accession which is expressed by the similarity index (IS) <0.091.

Centella asiatica, Cluster analysis, community structure diversity, endophytic fungi, pegagan Malaysian accession

BP-02

Phylogenetic of clove (*Syzygium aromaticum*) based on chemical compounds

Syahrani Wael^{1,2,✉}, Tri Rini Nuringtyas¹, Nastiti Wijayanti¹, Pudji Astuti³

¹Faculty of Biology, Universitas Gadjah Mada. Jl. Teknik Selatan, Sekip Utara, Sleman 55281, Yogyakarta, Indonesia

²Department of Biology, Universitas Pattimura. Kampus Peka, Ambon, Maluku, Indonesia

³Department of Veterinary Medicine, Universitas Gadjah Mada. Sleman 55281, Yogyakarta, Indonesia

Clove (*Syzygium aromaticum* (L.) Merrill & Perry) is a herbal plant from Moluccas, Indonesia which is believed to be various treat diseases. There are many varieties of *S. aromaticum* as zanzibar, sikotok, siputih, and raja. This research analyzed the phylogenetic relationship between varieties of cloves (zanzibar, sikotok, siputih and raja) of determining similarity of chemical compounds. Leaf of *S. aromaticum* was collected from Negeri Lima, Ambon, Moluccas, Indonesia. Samples were extracted used n-hexane solvent. Compounds were determined used GC-MS

and analysis phylogenetic used cluster test. Zanzibar varieties contains 5 compounds consist of 70.43% eugenol, 16.79% β -caryophyllene, 3.05% α -humulene, 2.07% caryophyllene oxide, 3.12% tetratetraconten. Raja varieties contains 4 compounds consist of 77.24% eugenol, 16.15% β -caryophyllene, 1.52% α -humulene, 5.08% caryophyllene oxide. Sikotok varieties of 5 compounds consist of 16.50% β -isopropylideneglycerol, 48.33% eugenol, 28.80% β -caryophyllene, 2.97% α -humulene, 3.40% caryophyllene oxide. Varieties of siputih 4 compounds consist of 80.15% eugenol, 13.44% β -caryophyllene, 1.50% α -humulene, 4.90% caryophyllene oxide. Conclusion: the content of compounds found in 4 varieties of clove consist of eugenol, β -caryophyllene, α -humulene, and caryophyllene oxide. There is phylogenetic relationship of raja varieties and siputih compared with other varieties.

Clove, compound, phylogenetic

Diversity of Ecosystem

CO-01

Growth and yield performance of several introduced and a local shallot variety (*Allium ascalonicum*) in Manokwari, West Papua

Saraswati Prabawardani^{1, *}, Meilany O. Setiawan², D. Wasgito Purnomo³

¹Faculty of Agriculture, Universitas Papua. Jl. Gunung Salju, Amban, Manokwari 98314, West Papua, Indonesia

²The Agriculture Agency of West Papua Province. Manokwari, West Papua, Indonesia

This study was aimed to observe the growth and yield performance of shallot varieties (*Allium ascalonicum* L.). An experiment was laid out in a randomized complete block design with 3 replications. This study was carried out in Nuni Village, North Manokwari Sub-district, Manokwari District from July to September 2017. The treatments consisted of 7 shallot varieties (6 nationally introduced varieties and 1 local variety). Results indicated that the varieties of Tajuk and Bima Brebes adapted well to the local ecosystems by producing higher vegetative growth and yield than other introduced and local varieties. Shallot varieties of Tajuk and Bima Brebes consistently produced higher yield than other varieties. Tajuk and Bima Brebes were higher in bulb weight, fresh bulb and leaf weight, and dry bulb and leaf weight. In addition, Bima Brebes at this trial was able to produce higher yield than the result obtain nationally based on the description. This is an indication that these two varieties adapted to a broad ecosystem. In contrast, a local variety showed more favourable response in the vegetative growth compared to some introduced varieties. However, all yield components were low in the local variety.

Allium ascalonicum, growth, shallot, yield

CP-01

Climate variability adaptation using cropping calendar in rice production centers in Indonesia

Yayan Apriyana

Balai Penelitian Agroklimat dan Hidrologi, Balitbangtan. Jl. Tentara Pelajar No 1A, Bogor 1611, Jawa Barat, Indonesia

The impact of climate variability related to ENSO (El Niño Southern Oscillation) in the Pacific Ocean and the IOD (Indian Ocean Dipole) are very pronounced in the cropping pattern changes. Research has been conducted in West Java, Indonesia (Monsoon rainfall pattern) and West Sumatra, Indonesia (Equatorial rainfall pattern). Analysis of the correlation between ENSO and the IOD with rainfall has been carried out to find the relationship between ENSO and the IOD with rainfall. In the period of June-November, the impact to rice-field in West Sumatra was only about 20% while, the impact in West Java could reach up to 80%. In the El Niño event had delayed planting time by 2 to 5 dekads (ten days period) in monsoon rainfall pattern (West Java) and 1 dekads in equatorial pattern (West Sumatra). Meanwhile, the IOD positive event in West Sumatra and West Java had delayed planting time by 1 to 2 dekads. Adaptation to climate anomalies was more apparent in a monsoon rainfall pattern region with adjustment of planting time by changing crop rotation from Rice-Rice-Bare into Rice-Maize/Soybean-Bare and Rice-Rice-Maize/Soybean into Rice-Maize/Soybean-Bare

Climate variability, adaptation, cropping calendar, rice production centers

Ethnobiology and Socioeconomics

DO-01

Wattled Brushturkey bird poaching system in the Sigim and Sinaitousi communities in the buffer zone of the Arfak Mountain Reserve, West Papua, Indonesia

Hotlan Manik^{1, *}, Ruhyat Partasasmita², Johan Iskandar², Handarto³, Indrawati Yudha Asmara⁴, Husmy Yurmiaty⁴

¹Department of Animal Production, Faculty of Animal Husbandry, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia

²Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia

³Department of Agricultural Machinery, Faculty of Agricultural Industry, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor,

Sumedang 45363, West Java, Indonesia

⁴Department of Animal Production, Faculty of Animal Husbandry, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia

Illegal hunting is still the cause of the decline in wildlife populations in nature. This is particularly the case with protected wildlife and endemic species categories, such as the Wattled Brushturkey (*Aepyodius arfakianus* (Salvadori, 1877) birds in Palau and West Papua. Thus, research needs to be done on the hunting system at the site. The aim of this research was to know Wattled Brushturkey hunting system by Sigim and Sinaitousi Villagers, Arfak Mountains of West Papua. The research used descriptive method with field observation technique and semi-structural interview. The results show that the main purpose of hunting Wattled Brushturkey birds conducted by the Sigim and Sinaitousi communities is to be consumed, while hunting some eggs is only a small part for sale. The hunts made by the two villages generally form a group hunting system. The frequency of hunting depends on needs and demand. Hunting is done by snares, using dogs, and combinations of snares and dogs. Tools used by snares and machetes, air rifles or arrows. The use of modern tools such as wind weapons has been used in both villages. When hunting birds Wattled Brushturkey begins morning until late afternoon. The location of hunting is usually in primary forest, secondary forest of former garden and river basin.

Hunting system, Sigim, Sinaitousi, Wattled Brushturkey

DO-02

The local management and sustainable system of swidden farming in Village of Bojongsalam and Sukaesmi, Upper Cisokan Watershed, West Java, Indonesia

Ira Robibatul Choir^{1,✉}, Johan Iskandar², Parikesit², Ruhyat Partasasmita²

¹Program of Environmental Study, Universitas Padjadjaran. Jl. Sekeloa Selatan I, Bandung 40132, West Java Indonesia

²Department of Biology, Faculty of Mathematics and Natural Science and Graduate Program in Environmental Study (PSMIL & DIL), Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, Jawa Barat

³Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, Jawa Barat

In the past, the swidden farming (*huma* or *ladang*) system had been predominantly practiced by village people of West Java, Indonesia. Nowadays, however, the huma farming has been rarely practiced by the Village people of West Java due to the government policy, and environmental and socioeconomic changes. The local community who reside in Village of Bojongsalam and Sukaesmi, the upper stream of Cisokan, West Java, Indonesia, has still practiced both the wet rice field (*sawah*) and the huma farming in the private land, production forest of Perhutani, and PLN project land. Recently some areas of

the huma farming land have been used for the project of the Hydroelectric Power of the Upper Cisokan Pumped Storage (UCPS). As a result, sustainability of swidden farming (*huma*) system of the local people of Bojongsalam and Sukaesmi has been seriously disturbed. The aim of the study was to elucidate the local management of the huma farming systems that are undertaken by local people of Bojongsalam and Sukaesmi Villages; and to analyze the sustainability of the huma farming of local people of Bojongsalam and Sukaesmi Village due to affected by the UCPS project. The qualitative method was used, while several techniques of collecting the primary data, namely observation and deep interview with informants were applied in this study. The result of study showed that the local management of the huma farming has been annually undertaken by the local people of Bojongsalam and Sukaesmi, including deciding the location of huma plot, land preparation (cutting shrubs and burning vegetation biomass), planting rice (*ngaseuk*) and other annual crops, weeding weeds (*ngored*) and providing chemical fertilizers (*mupuk*), pest control, harvesting rice (*dibuat*), and fallowing land. Based on analysis of the emergent properties of the huma farming, it can be predicted that productivity, stability, equitability, and sustainability of the huma farming systems of Bojongsalam and Sukaesmi Villages tends to be low for the near future due to affected by the UCPS project.

Huma, local management, sustainability, swidden farming system, upper Cisokan

DO-03

Exotic menu: threats to conservation of mammals in Papua

Freddy Pattiselanno^{1,2,✉}, Johan F. Koibur¹

¹Biodiversity Study Center, Universitas Papua. Jl. Gunung Salju, Amban, Manokwari 98314, West Papua, Indonesia

²Laboratory of Livestock Production, Faculty of Animal Science, Fisheries and Marine Sciences, Universitas Papua. Jl. Amban, Gunung Salju, Manokwari 98314, West Papua, Indonesia

Many people in Papua, Indonesia still rely on bushmeat as an alternative source of family diets. We carried out meal surveys to investigate household consumption of local communities along the coast of Tambrauw District in West Papua, Indonesia. In collaboration with 33 hunters, we also recorded hunting returns to explore hunting prey that contributed to the household consumption. This paper presents the results of the study.

Exotic menu, mammals, conservation, Papua

DO-04

Competitiveness and sustainability analysis of superior commodity in West Java, Indonesia

Yooce Yustiana[▼], Achmad Sjarmidi, Mia Rosmiati, Ramadhani Eka Putra, Endang Hernawan, Tien Lastini, Angga Dwiartama

School of Life Sciences and Technology, Institut Teknologi Bandung.
Labtek XI SITH-ITB, Jl. Ganesa 10, Lebak Siliwangi, Coblong, Bandung 40132, West Java, Indonesia

Economists give more attention to comparative and competitive advantages which run dynamically, because it is related to economic growth and involved two aspects, there are supply and demand. For West Java, the production and trade of biological resources play an important role in the economic sector. But the considered superior product, not able to adjust the dynamic comparative advantage. As a result, the product is not adaptive and responsive to faces changing market demands. This study aims to arrange criteria of best biological resources, then conduct selection based on three classifications there are potential, prospective, and superior. Beside that, this study aims to analyze the sustainability of the product itself. The criteria are determined by the PKIV, AHP (Analytical hierarchy process), and pricing using PAM (Policy Analysis Matrix) followed by determining score and selection the product using the analysis hierarchial cluster technique, through SPSS application. While the sustainability is analyzed by Likert scale method, which refers to the index of sustainability of farming. There are ten defining criteria: (1) domestic resource-cost (2) added value, (3) trade value, (4) investment value, (5) environmental sustainability, (6) land suitability, (7) government policy, (8) availability of technology, (9) inter-sectoral linkages, (10) Community culture. From these criteria, the top ten products that fulfill the criteria are: (1) Sheep, (2) Tea, (3) Beans, (4) Petsay, (5) Pineapple, (6) Cabbage, (7) Mangosteen, (8), Carrots, (9) Freshwater fish, and (10) Bananas. But, only three commodities are sustainable enough, there are sheep, tea, and beans.

Competitiveness, considered superior, sustainability product

DO-05

Site selection and soil fertility management among Outer Baduy People in maintaining swidden cultivation productivity

Johan Iskandar[▼], Budiawati S.Iskandar, Ruhyat Partasasmita

¹Department of Biology, Faculty of Mathematics and Natural Sciences, & Program in Environmental Science, Postgraduate Faculty, and Institute of Ecology (PPSDAL), Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java Indonesia

²Department of Anthropology, Faculty of Social and Political Science, Universitas Padjadjaran, Jatinangor, Sumedang 45363, West Java Indonesia

³Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran, Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, Indonesia,

The Outer Baduy people heavily depend on swidden cultivation for subsistence. They grow rice in the uplands every year based on their calendar. The cropping calendar and calendar of social events area often closely interlinked. There is also some traditional wisdom for conservation of land and forest such as the zonation for land use system. The Outer Baduy swidden land productivity is mainly determined by forest fallow time relative to crop time. The long-term success of Outer Baduy swidden cultivation depends on how well the fallow period restores or maintain soil fertility. The aim of this research was to study local knowledge of Outer Baduy on soil category and soil fertility, and management of soil fertility in their traditional practice of swidden cultivation. The method used in this study was qualitative. While several techniques namely observation and deep interview were applied to collect the primary data. The result of study showed that the soils are classified by Outer Baduy based on color, water content, stoniness or rock parent material, and humus content. To maintain soil fertility in the swidden cultivation, Outer Baduy people have developed some strategies, such as managing fallow time in appropriate interval, application of zero tillage, and planting legumes crops in both the swidden field and fallow time. Traditionally, because the Outer Baduy are forbidden to use inorganic fertilizers, duration of fallow time and kind of vegetation succession have an important role in maintaining soil fertility.

Outer Baduy, soil category, and soil fertility, soil fertility management, swidden cultivation

DO-06

The changes of the traditional home garden systems converted to the commercial homegarden systems: A case study in Sukapura Village of the upstream Citarum watershed, West Java, Indonesia

Juliati Prihatini^{1,▼}, Johan Iskandar², Ruhyat Partasasmita²

¹ IPDN (The Government Institute of Home Affairs). Jl. Ir. Soekarno Km 20, Jatinangor, Sumedang 45363, West Java, Indonesia

²Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia

In the past rural homegarden systems of West Java, Indonesia had been planted by various annual and perennial crops. As a result, the vegetation structure of traditional homegarden of rural of West Java was very complex which was similar to that of forest vegetation. Nowadays, however, due to rapid development of market economic system in the rural areas, many traditional home garden systems of West Java have been converted to commercial homegarden systems. Consequently, structure and functions of the traditional homegarden systems have dramatically changed. For example, the vegetation structure has been simpler and dominated by commercial crops, and economic function more dominated instead of

provided various ecological and socio-economic and cultural functions. The aim of this study was to elucidate the changes of structure and functions of the traditional homegarden systems converted to the commercial homegarden system in Village of Sukapura, Subdistrict of Kertasari, District of Bandung, Upstream Citarum Watershed, West Java, Indonesia; to analyze the household income from both the traditional and commercial home gardens of Sukapura Village; and elucidate negative impacts of the commercial homegarden systems of Sukapura Village. The mixed method, combination of qualitative and quantitative method was used, while some techniques, including observation, deep interview with competent informants, and structure interview with respondents were applied in this study. The results of study showed that initially, the traditional homegarden system of Kertasari Village has predominantly cropped by various annual and perennial crops. However, due to market economic development, the traditional homegarden systems have been dramatically changed. For example, the commercial vegetable crops, including bawang daun (*Allium fistulosum* L), tomato (*Solanum lycopersicum* L), and chili (*Capsicum annum* L) have been predominantly cultivated in the commercial homegarden systems. Consequently, the household income of the village people who own the commercial homegarden system increased. However, some ecological and socio-cultural functions of the commercial home garden system dramatically decreased. In addition, some negative impacts of the commercialization of the homegarden systems have occurred.

Changes of home garden, commercial homegarden, traditional homegarden, Upper Citarum Watershed

Bioscience

EO-01

Potential of *Archidendron jiringa* by-product as an alternative source of tannin and saponin

Nur Hidayah[✉], Suliasih

Department of Animal Husbandry, Faculty of Agricultural, University of Muhammadiyah Bengkulu. Jl. Bali, Kampung Bali, Teluk Segara, Kota Bengkulu 38119, Indonesia

Bengkulu is one province in Indonesia with the second rank production (107.99 kg/trees) of *Archidendron pauciflorum* (Benth.) I.C.Nielsen (syn: *Archidendron jiringa*) after East Java province. During this time, *A. jiringa* is used as food and medicine, but the by-product of *A. jiringa* (peel and leaves) has not been utilized optimally, just being waste. The objective of this research was to evaluate percentage of tannin and saponin *A. jiringa* by-product. Percentage of tannin was measured according to

Van-Burden T et al. (1981) method, and saponin was measured according to Obdoni B and Ochuko P (2001) method. The research was conducted in a completely randomized design with 2 treatments and 4 replicates. Data were tested using Analysis of T-test. The result showed that *A. jiringa* leaves contain (14.74%) of tannin which was higher than the peel (7.82%). However the percentage of saponin contained the peel (56.92%) was higher than the leaves (29.66%). The result suggested that *A. jiringa* by-product has potential as an alternative source of tannin and saponin

Archidendron jiringa, by product, saponin, tannin

EO-02

Duodenum morphology of Male Layer Chicken (*Gallus gallus gallus*) after ethanolic extract treatment by *Anacardium occidentale* as a candidate for antibiotic growth promoter

Hendry T.S.S.G. Saragih, Elgio Venanda Ginting[✉]

Faculty of Biology, Universitas Gadjah Mada. Jl.Teknika Selatan, Sekip Utara, Sleman 55281, Yogyakarta, Indonesia

The aim of this research was to know the effect of Ethanolic Extract of Cashew Leaves (EECL) (*Anacardium occidentale* L.) on pre-starter feed on growth performance and morphology of male layer chick duodenum [*Gallus gallus gallus* (Linnaeus, 1758)]. This research uses 5 groups design with 28 tail Day-old Chicks (DOC) of each group. Control group with basal feed, treatment group 1 with Enramycin 0,125g/kg of basal feed, treatment group 2 with Enramycin 0,250g/kg of basal feed, treatment group 3 with ethanolic extract of cashew leaf 5g/kg of basal feed, and treatment group 4 with ethanolic extract of cashew leaf 10g/kg basal feed, treatment until the age of 14 days. Parameters related to chicken weight at age 0, 2, 4, 6, 8, 12, and 14 days, Feed Conversion Ratio (FCR) and villus height, crypt depth and villus/crypt duodenum ratio at 0 and 14 days, and also goblet cell area at 14 days. Analysis of data with one way ANOVA test and Tukey test with significance $P \leq 0,05$. The results showed weight of P3 and P4 on day 14 were higher with the control group and other groups. While the feed intake of P4 group had the highest yield and the result of FCR group P3 was better than the other group. The morphological results of the 14th day of the chickens duodenum consisting of the number of villus height, crypte depth, villus/crypt ratio, goblet cell area showed that P3 and P4 groups were better than the other group ($P \leq 0,05$). The conclusions of the study showed that EECL group P3 with dose of EECL 5g/kg of basal feed and P4 group with dose of EECL 10g/kg of basal feed had an effective ability as a feed supplement on pre-starter feed of male layer chick.

Anacardium occidentale, male layer chick, morphology of duodenum

EO-03

Land suitability analysis of shrimp pond land former in Bantul District, Yogyakarta, Indonesia using Geographic Information System

Sarah Afsholnissa[✉], Endang Hernawan, Tien Lastini

School of Life Sciences and Technology, Institut Teknologi Bandung.
Labtek XI SITH-ITB, Jl. Ganesa 10, Lebak Siliwangi, Coblong, Bandung 40132, West Java, Indonesia

Shrimp farming in the southern coast of Bantul District, Yogyakarta, Indonesia is considered to be the cause of environmental degradation, and decline of mangrove association due to logging for land conversion to shrimp farm land. Failure in pond management has worsened the problems. The existence of ponds is also considered to be the cause of decreasing the amount of agricultural crops around the shrimp pond. Therefore, the purpose of this study is to identify land use change, land use and analyze the land suitability for shrimp farming, agriculture and mangrove plant associations. Identification of land use using ENVI 5.3 software with Maximum Likelihood Classification method and 5.06% (55.85 ha) land use result for shrimp farms with category empty ponds of 3.16% (34.88 ha) and active ponds of 1.90% (20.97 ha) and as much as 8.31% (91.93 ha) of land used for agriculture. The land use is proved by ground-truthing using Kappa analysis method and obtained a result of agreement of 0.70 (good) for ponds and 0.60 (moderate) for agricultural land. Land suitability was evaluated using ArcGIS 10.5 with overlay method. Evaluation of land suitability for shrimp ponds with an area of 634.82 ha, and suitability for non-paddy agriculture with total area of 84.32 ha. While the suitability for paddy field is spread with 148,58 ha of land area, and land suitability for plant association of mangrove with land area 616,42 ha. From the output of land suitability then measured the perception of the community using Likert scale and obtained the result of 64% (agree) to use the land as farming land, 59% (neutral) use the land as rice farming land, 77% (agree) use the land as farming land for agriculture non-rice, and 59% (neutral) make the land as an area of mangrove association. Therefore, it can be concluded spatially and percentage of society perception that coastal area of Bantul District is dominantly suitable to be utilized as shrimp farm.

Land suitability, land use change, shrimp farming

EO-04

Effect of nodes position on the growth and yield of stem cutting of sambiloto (*Andrographis paniculata*)

Solikin

Purwodadi Botanic Gardens, Indonesian Institute of Sciences. Jl. Raya Surabaya-Malang Km 65, Purwodadi, Pasuruan 67163, East Java, Indonesia

Vegetatively plant propagation by cuttings can be done to produce plants with relatively uniform yield quality such as sambiloto (*Andrographis paniculata* (Burm.f.) ex Nees). The study aimed to determine the effect of nodes position on the growth and yield of stem cutting of sambiloto which were propagated by stem cuttings was conducted in Purwodadi Botanic Garden in February-May 2017. The study used Randomized Block Design with the treatments of top, middle and base of stem cuttings. Each treatment was replicated three times. The results showed that the top stem cutting produced the highest of live cutting, leaf area, leaf dry weight, root and generative organs dry weight. In contrast, the base stem cutting provided the lowest live cutting and plant growth.

Andrographis paniculata, cutting, growth, propagation

EO-05

Changes of defense-related enzymes activities of tomato to *Ralstonia syzygii* subsp. *indonesiensis* by indigenous endophytic *Bacillus* spp.

Yulmira Yanti^{1,✉}, Warnita¹, Reflin², Chainur Rahman Nasution²

¹Departement Plant Protection, Faculty of Agriculture, Universitas Andalas. Kampus Unand Limau Manis, Padang 25163, West Sumatra, Indonesia

²Department of Agroecotechnology, Faculty of Agriculture, Universitas Andalas. Kampus Unand Limau Manis, Padang 25163, West Sumatra, Indonesia

Plants respond to pathogen attack by activating various defense responses, which are associated with the accumulation of several factors like defense-related enzymes and inhibitors which serve to prevent pathogen infection. *Bacillus* spp. are well-known bacteria that can promote growth rate and control plant pathogens. Our Previous studies had acquired 6 potential *Bacillus* strains to promote growth rate and increase growth and yields of tomato. This study focused on the role of *Bacillus* spp. species to change defense-related enzymes activities on tomato inoculated with *Ralstonia syzygii* subsp. *indonesiensis*. This research was done in completely randomized design with 7 treatments (6 strains + control) and 5 replications. Parameter observed are disease development and Defense Related Enzymes Activities which were Phenylalanine ammonia lyase (PAL), Polyphenol oxidase (PPO) and Peroxidase (PO). Results showed that all *Bacillus* spp strains increased all enzymes activities compared to control. All enzymes activities shown correlated with the increased resistance of tomatoes to *R. syzygii* subsp. *indonesiensis*, where *B. pseudomycoides* strain NBRC 101232 have the highest enzyme activities and lowest disease development, followed by *B. cereus* strain CCM 2010 and *B. toyonensis* strain BCT-7112. This confirms that the activity of *Bacillus* spp. used in this study in controlling *R. syzygii* subsp. *indonesiensis* is by modulating defense-related enzyme

pathway and suggests the use of those bacteria as potential biocontrol agents in tomato cultivation.

Bacillus, peroxidase, PGPR, phenylalanine ammonia lyase, polyphenol oxidase, enzyme

EO-06

Phytoremediation of wastewater with *Echinodorus radicans* and *Sagittaria lancifolia* in Purwodadi Botanic Garden, Indonesia

Rony Irawanto

Purwodadi Botanic Gardens, Indonesian Institute of Sciences. Jl. Raya Surabaya-Malang Km 65, Purwodadi, Pasuruan 67163, East Java, Indonesia

Indonesia is a tropical country well-known as rich in biodiversity, but a small part is known and utilized. Predicate as a mega-biodiversity country, now augmented with predicate of a hot spot country, a term that high levels of forest destruction and loss biodiversity. Add with high development efforts that ignore of environmental aspects, the impact of improving the quality and quantity of various types of pollutants, which directly or indirectly will greatly affect the environment. Water pollutants in wastewater from domestic, agricultural and industrial waste into water/rivers. While the condition of handling of waste water is still directly discharged into the drainage channel that will lead to water bodies without processing. The center plants role concept in the natural technologies framework to solve environmental problems are known as phytotechnology. One of phytotechnology application is phytoremediation. Phytoremediation is the use of plants process in restoring environmental quality from pollutants that contaminate environmental media. Given the potential of aquatic plants as phytoremediators, the effort to conserve the aquatic plants diversity in Purwodadi Botanical Gardens is very important. Therefore, research related to phytoremediation using aquatic plants needs to be done. This study aims to determine the ability of aquatic plants *Echinodorus radicans* and *Sagittaria lancifolia* in phytoremediation of organic wastewater (detergent) and inorganic wastewater (heavy metals). This research is descriptive with observation and experimental, descriptive based on literature study, observation or direct at Purwodadi Botanic Garden, sampling on aquatic plants collection, green house experiment in Botanic Garden, and laboratory analysis in Universitas Brawijaya. Aquatic plants from Purwodadi Botanic Garden *Echinodorus radicans* and *Sagittaria lancifolia* based on previous studies are known to have potential in wastewater treatment, not only form river quality but also used in household treatment, leachate, water treatment plant installation, industrial leather waste, slaughterhouses, tofu industry, even hospital wastewater. While the test results of heavy metal content such as Cd, Cr, Cu, Hg, and Pb is known to exist and accumulated in plant leaf tissue in fields. Also evidenced by results of morphological and experimental observations in KRP greenhouses using both

species of aquatic plants, has demonstrated its ability in phytoremediation against organic contaminants and heavy metal.

Echinodorus radicans, phytoremediation, *Sagittaria lancifolia*, wastewater

EP-01

Diversity of biofilm formation *Pseudomonas aeruginosa* from clinical isolates and antibiotic susceptibility

Didik Wahyudi^{1,2,*}, Abu Tholib Aman¹, Niken Satuti Nur Handayani¹, Endang Sutariningsih Soetarto¹

¹ Faculty of Biology, Universitas Gadjah Mada. Jl. Teknik Selatan, Sekip Utara, Sleman 55281, Yogyakarta

²Departement of Medical Laboratory Technology, Sekolah Tinggi Ilmu Kesehatan Nasional. Jl. Yos Sudarso 334, Surakarta 57155, Central Java, Indonesia

Pseudomonas aeruginosa (Schröter 1872) was an important nosocomial pathogen, that capable of causing both acute and chronic infections. these bacteria have diversity biofilm formation in a species. Biofilm is a collection of bacterial cells attached to the tissue, which is coated by polysaccharides and extracellular matrix, which causes bacteria to become resistant to antibiotics, so that infection is difficult to treatment. The aim of this study was to diversify clinical isolates of *P. aeruginosa* in biofilm formation, and susceptibility to some antibiotics. The bacteria were isolated from various patient samples at Dr. Moewardi Hospital Surakarta, Indonesia, from August to December 2017. The isolates were purified using single cell colony technique. The bacterial identification and susceptibility to many antibiotic using automatic equipment (vitek® 2). Test method of biofilm formation by using the Tissue Culture Plate, readings of results was monitored spectrophotometrically at wavelength 570 nm and repeat 8 times. The results showed 64 isolates of *P. aeruginosa* from blood, sputum, urine, ear middle, urine catheter, pleural fluid, pus, stool, aspirate, cerebrospinal, have 22% weak in forming biofilm, 50% moderate, and 28% strong. Isolate *P. aeruginosa* more resistant to ampicillin, cefazolin, tigecycline, nitrofurantoin, and cotrimoxazole. They sensitive to piperacillin, ceftazidime, cefepime, aztreonam, meropenem, amikacin, gentamicin, and ciprofloxacin. The conclusion, clinical isolates of *P. aeruginosa* may form biofilms of different abilities, Strong isolates of biofilm formation tend to be more resistant to many antibiotics, the most sensitive to amikacin and resistant to ampicillin.

Biofilm, *Pseudomonas aeruginosa*, susceptibility antibiotic

EP-02**Antibiofilm activities of extract *Mimosa pudica* against expression of intercellular adhesion (ica) A of *Staphylococcus aureus* subsp. *aureus*****Bq. Mutmainnah^{1,✉}, Supnawadi¹, Ni'matuzahroh²**¹Akademi Kesehatan Gigi Karya Adi Husada Mataram. Jl. Dr. Soedjono Lingkar Selatan, Jempong Baru, Sekarbela, Mataram 83116, West Nusa Tenggara, Indonesia²Departemen of Biology, Faculty of Science and Technology, Universitas Airlangga. Jl. Airlangga No. 4-6, Mulyorejo, Gubeng, Surabaya 60286, Jawa Timur

Staphylococcus was a major cause of chronic infection in implantable medical devices that are resistant to various antibiotics. The attachment of cells to the host surface can be regulated by inhibiting the expression of intercellular adhesion (ica) operon encoding the formation of Polysaccharide Intercellular Adhesion (PIA). The objective of this study was to determine the effect of extract *Mimosa pudica* L. on the expression of *icaA* gene of *Staphylococcus aureus* subsp. *aureus*. Identification of gene expression of the *icaA* of *S. aureus* subsp. *aureus* was determined by using Real-Time PCR method. Transcription analysis showed that extract of *M. pudica* with concentration of 800 mg mL⁻¹ could down-regulate the expression of *icaA* on *S. aureus* subsp. *aureus* with fold change value 0.30 respectively. In conclusion, extract of *M. pudica* containing flavonoid could down-regulate the expression of *icaA* of Indonesian local *S. aureus* subsp. *aureus*. Therefore, the extract of *M. pudica* has the ability as antibiofilm of *S. aureus* subsp. *aureus*.

Antibiofilm expression of *icaA*, *Mimosa pudica* extract, *Staphylococcus aureus* subsp. *aureus*

EP-03**Feeding the diets containing the different levels of fermented rice bran for jelawat, *Leptobarbus hoevenii*****Hendry Yanto^{1,✉}, Junianto², Rita Rostika², Yuli Andriani², Ujang Hidayat Tanuwiria³**¹Program in Aquaculture, Faculty of Fisheries and Marine Sciences, Universitas Muhammadiyah Pontianak. Jl. Jend. Ahmad Yani No. 111, Pontianak 78124, West Kalimantan, Indonesia²Department of Fisheries, Faculty of Fisheries and Marine Sciences, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia³Program in Animal Husbandry, Universitas Padjadjaran. Jl. Raya Bandung-Sumedang Km 21, Jatinangor, Sumedang 45363, West Java, Indonesia

This research aimed to find the optimum level of fermented rice bran in diets to improve the digestive enzyme activity, growth and feed efficiency for jelawat (*Leptobarbus hoevenii* Bleeker). The treatment in this study was the levels of fermented rice bran in the diets: A1 (10%), A2 (20%), A3 (30%), A4 (40%), and A5 (10% non-fermented rice bran), as well as A6 (10% commercial diet). The experimental diets with the same protein (isonitrogenous) and energy (isocaloric) were fed to jelawat fingerlings with an average of 32.57±0.15 g per fish. The results showed that amylase activities were increased according to the increasing of fermented rice bran levels in the diets and it was significantly different among the treatments ($P<0,05$). Proteins and lipids of the body, protein and lipid retentions, daily growth rates and feed efficiencies were significantly different among the treatments ($P<0.05$). The fermented rice bran containing 30% of the diet was the best for jelawat with an optimum level of 25.66-26.78 % the growth performance and feed efficiency of jelawat.

Fermentation, *Leptobarbus hoevenii*, rice bran