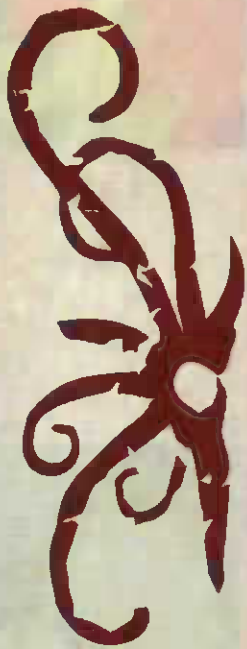




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ICTAFF 2018

International Conference
On Tropical Agrifood, Feed and Fuel

Sustainability of Food, Feed and Fuel Tropical Resources for Quality Future

SAMARINDA | 13-14 NOVEMBER | MESRA BUSSINES HOTEL

PROGRAM BOOK

International conference on food tropical agrifood, feed and fuel 2018
Sustainability of food feed and fuel tropical resources for quality life



ICTAFF 2018

International Conference
On Tropical Agrifood, Feed and Fuel



Welcome Note From ICTAFF 2018 Committee

Assalamu'alaikum Warahmatullah Wabarakatuh
A very Good Morning to You

I would like to express the greatest regard to the Almighty God, Allah Subhanallahi Wa Ta'ala, for the Successful of International Conference of Food, Feed and Fuel 2018. I also would like to welcome all the audiences to Samarinda Kota Tepian.

Food security is very important to strengthen and support sustainable development in agriculture. Food, not only from plant but also from animal, should be available for all resident of Indonesia. It is urgent to provide quality feed to support food animal development to fulfill people needs of nutrition.

We would like to report that about sixty participants are attending the conference. Researcher and lecturer from some universities and research institutions will disseminate their research in this conference. This number is beyond our expectation when we were arranging the conference.

This conference will present international speakers from Wailailak University, Associate Professor Somsak Maneepong, Prof. Irwandi Jaswir from International Islamic University of Malaysia, Prof Xuming Huang from South China Agricultural University, Prof Ali Agus from Gadjah Mada University, Dr. Dadan Rohdiana from Research Institute of Tea and Cinchona Indonesia, and last but not least, Widi Sunaryo, Ph.D from Mulawarman University.

The morning session is designed to keynote speeches and the afternoon session is for parallel sessions. The parallel sessions will be focused into six topics: Halal, safe and healthy food; Security and sustainability of food and agriculture; Innovation in feed technology to increase animal production; Sustainable and Renewable fuel based on tropical resources; and Empowering of agribusiness based on community.

Faculty of Agriculture as conference organizer would like to thank Agrivita, Journal of Agricultural Science on an agreement for publication of the selected papers from ICTAFF participants, and special thank Dr. Haviludin for helping our communication to the agreement. I also would like to thank to STIPER Kutai Timur, especially Prof. Juraemi, for cooperation in organizing and special thanks to PT. Kaltim Prima Coal and PT. Pupuk Kaltim for strong support to this conference. We hope you will enjoy the tropical climate as long as staying in Samarinda.

Thank you
Wassalamu'alaikum warahmatullahwabarakatuh

Committee of ICTAFF 2018

Aswita Emmawati
Chairman



FACULTY OF AGRICULTURE AT A GLANCE

Faculty of Agriculture or abbreviated as Faperta Unmul, is one of the first faculties established under the auspices of Mulawarman University located on Jalan Pasir Balengkong, Kelurahan Gunung Kelua, Samarinda, East Kalimantan, Indonesia. The Mulawarman University Faculty of Agriculture was founded in 1962 at the beginning the Faculty of Agriculture of Mulawarman University joined together with the Faculty of Forestry, Mulawarman University, then in 1967 two independent faculties were developed, the Mulawarman University Faculty of Agriculture and Mulawarman University Faculty of Forestry. The current Dean of the Faculty of Agriculture, Mulawarman University Dr. Ir. H. Rusdiansyah, M.Si.

HISTORY

The Faculty of Agriculture and Forestry was one of the first three faculties to be opened when Mulawarman University was established on September 27, 1962 based on the Decree of the Minister of Education and Science No.130 of 1962 dated September 28, 1962, and was formally confirmed based on Decree of the President of the Republic of Indonesia No. 65 dated April 23, 1963. In 1967, the Faculty of Agriculture and Forestry was developed into two independent faculties, namely the Faculty of Agriculture and the Faculty of Forestry.

The first location of the Faculty of Agriculture is Jalan Barito 5 where administration, lectures, and practicums are held. In addition, practicum is also held at the Veterinary Office of the Province of East Kalimantan (now the Livestock Service Office of the Province of East Kalimantan) on Jalan Bhayangkara. In 1964 the Faculty of Agriculture occupied a new location on Jalan Flores which is now used by the Master of Management Masters Program, then moved again to the location on Jalan Biawan in 1969, one location with a complex of UNMUL lecturers Sidomulyo. It was not until 1982 that the Faculty of Agriculture occupied the current campus location (Kelua Mountain campus). During his journey from 1962 until now, the Faculty of Agriculture has been led by 18 Deans consisting of 14 different people. At this time, the Faculty of Agriculture has an Education garden located in Berambai and Karang Tunggal Village, Tenggara Seberang District, Kutai Kartanegara Regency

STUDY PROGRAM

The Mulawarman University Faculty of Agriculture currently has 6 Study Programs, namely:

Diploma in Plantation Study Program;

1. Undergraduate Agroecotechnology Study Program in the Department of Agroecotechnology with 3 Study Concentrations, namely:
 - Plant Disease Science
 - Geology
 - Agronomy
2. Study Program for Bachelor of Agribusiness in the Department of Agribusiness with 2 Study Concentrations, Namely:
 - Agribusiness
 - Communication and Community Empowermen
3. Bachelor Program in Agricultural Product Technology or THP in Agricultural Product Technology Department
4. Bachelor of Animal Husbandry Study Program in Animal Husbandry Department
5. Wet Tropic Post Graduate Study Program

The Mulawarman University Faculty of Agriculture collaborates with the East Kalimantan Provincial Government to open 2 intensive study programs which opened in the 2013/2014 Academic Year, namely:

1. Bachelor of Agriculture Extension Program in the Department of Agribusiness
2. Bachelor of Animal Husbandry Extension Study Program in Animal Husbandry Department Mulawarman University



ICTAFF 2018

International Conference
On Tropical Agrifood, Feed and Fuel

ABOUT THE CONFERENCE



Tropical rainforests are the richest areas of germ plasm which have the potential to be developed in fulfilling Indonesia's development goals. The development of agriculture aims to meet human needs for nutritious, safe, healthy food and meet halal criteria, considering that Indonesia is the largest Muslim consumer.

To fulfill large food needs, both biological and animal food, various research-based innovations need to be carried out to improve the quality and quantity of food production. In terms of improving the quality of animal food, innovation also needs to be done in the technology of feed production in order to contribute to producing quality animal food with sufficient quantity.

Tropical forest resources also have the potential to be a solution the problem of the energy crisis. Researches on renewable energy resources are interesting to develop along with technology-based agricultural development that can be optimized with the support of unbroken energy available through renewable energy.

The conference activity was scheduled by the Mulawarman University Faculty of Agriculture to disseminate the latest developments in the fields of food, feed and renewable energy based on tropical resources. Researchers and lecturers are expected to be able to discuss the development of research activities that are expected to help solve the problems of the world community and provide solutions to overcome the food and energy crisis.

It is expected that the ICTAFF 2018 will present qualified speakers in their fields, researchers and academics from universities and domestic and foreign research institutions and students who are eager to contribute their thoughts to the progress and development of the Unitary State of the Republic of Indonesia in a dignified and scientifically based manner.

Food and energy security has become the most interconnected problem faced by human in this century due to the growing population of people and industrial activity. Providing adequate quantity and quality of food for such a large population highlights the challenges point of our food production system. In respond to the problem, Faculty of Agriculture, Mulawarman University will hold an International Conference on Tropical Agrifood, Feed, and Fuel (ICTAFF) 2018 that scheduled at 13-14th November in Mesra Business and Resort Hotel, Samarinda. This year, the conference takes "Sustainability of Tropical Food, Feed, and Fuel Tropical Resources for Quality Future" as the main theme.

This international conference is aimed to connect the ideas in resolving problems and bring together scientists, researchers, professionals, and students from multidisciplinary agriculture-related field to share the latest findings or ongoing research activities. "This scientific event will be a great opportunity to share and discuss the problem challenges in tropical agriculture and animal production along with their socio-economic impacts," Said Dr. Aswita Emmawati, the chairperson of the conference.

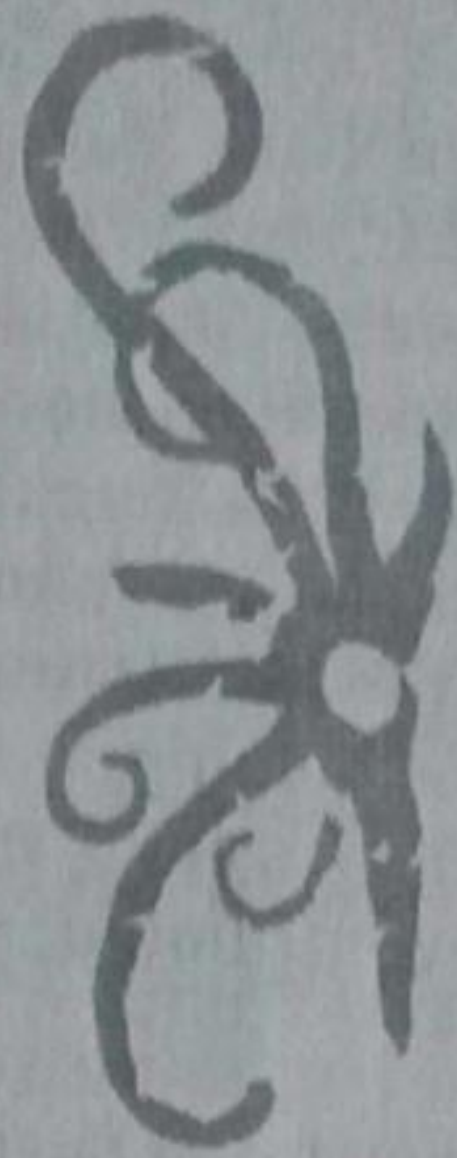
The objective of this conference is formulated in relevance with the commitment of Unmul in developing and utilizing tropical natural resources wisely. "The demand for more high-quality foods will have to be met by increases derived from agriculture systems. As a result, animal agriculture in the 21st century faces increasing and persistent challenges to produce better quality food in the context of an emerging, globally complex set of conditions for sustainable food production," Dr. Aswita Emmawati explained.

Therefore, according to the problems, there are 6 sub themes emphasized in the ICTAFF 2018, including halal, safe, and healthy food, improving quality food and nutrition, security and sustainability food and agriculture, innovation in feed technology to increase animal production, sustainable and renewable fuels based on tropical resources, and empowering of agribusiness based on community. Accordingly, the committee will invite relevant experienced scientists as keynote speakers, they are Asst. Prof. Dr. Somsak Maneepong from Walailak University Thailand, Prof. Xuming Huang from South China Agricultural University, Prof. Irwandi Jaswir from International Islamic University Malaysia (IIUM), Prof. Ali Agus from Gadjah Mada University, Dr. Dadan Rochdiana from Research Institute of Tea and Cinchona Indonesia, and Widi Sunaryo, PhD from Mulawarman University Indonesia. Through this agenda, Dr. Aswita Emmawati hopes that Unmul will continuously give a significant contribution regarding on sustainability of food, feed, and fuels for better quality of life.

The theme of the conference is "Sustainability of Tropical Food, Feed, and Fuel Tropical Resources for Quality Future". There are 6 sub themes will be addressed in invited talks and submission of papers:

1. Halal, safe, and healthy food
2. Improving quality food and nutrition
3. Security and sustainability food and agriculture
4. Innovation in feed technology to increase animal production
5. Sustainable and renewable fuels based on tropical resources
6. Empowering of agribusiness based on community.

International conference on food tropical agrifood, feed and fuel 2018
Sustainability of food feed and fuel tropical resources for quality future



ICTAFF 2018

International Conference
On Tropical Agrifood, Feed and Fuel

CONFERENCE SCHEDULE



**INTERNATIONAL CONFERENCE ON FOOD TROPICAL AGRIFOOD, FEED AND FUEL
(MENTION 2018)**

13 NOVEMBER 2018

Time	Agenda	Description	Room	Information
07.30 - 08.00	Registration	Participants get a seminar kit, submit the SPPD and ensure the correctness of writing names and titles for writing certificates and SPPD	Grandroom Melati	Committee -Aprilia K. -M.Zainal Amir -Candra Kadwa -Emilia Poni
08.00 - 08.45	Opening Ceremony • Sing a song Indonesia Raya • Prayers by 1. Welcome Speech by 2. Welcome Speech by 3. Welcome Speech by	Opening Dance Dr. Aswita Emmawati, S.TP., M.Si. Prof. Dr. H. Masjaya, M.Si. Dr. Ir. H. Isran Noor, M. Si.	Grandroom Melati	Committee Committee of ICTAFF Rector Of Mulawarman University Governor of East Kalimantan
08.45 - 09.00	Coffe Break		Grandroom Melati	Committee
09.00 - 10.45	Plenary Session I Chair : 1. Speaker 2. Speaker 3. Speaker	Dr. Odit Ferry Kurniadinata, SP., M.Si. Prof. Xuming Huang, Ph.D. Assoc. Prof. Dr. Somsak Mannepong Widi Sunaryo, SP., M.Si., Ph.D.	Grandroom Melati	Committee South China Agricultural University Walailak University, Thailand Mulawarman University, Indonesia
10.45 - 12.15	Plenary Session II Chair : 1. Speaker 2. Speaker 3. Speaker	Sulistyo Prabowo, S.TP., MP., MPH., Ph.D. Prof. Dr. Irwandi Jaswir Dr. Dadan Rohdiana Prof. Dr. Ir. Ali Agus, DAA., DEA	Grandroom Melati	Committee Internasional Islamic University, Malaysia Research Institute Of Tea and Chincona, Indonesia Gadjah Mada University, Indonesia

	Souvenirs	to the speaker	Grandroom Melati	Committee
12.15 - 13.00	Lunch Break		Grandroom Melati	Committee
	Poster Presentation		Grandroom Melati	Committee
13.00 - 16.00	Parallel Session			Committee
	Chair : Anton rahmadi S.TP.,MSi.,Ph.D		Maloi Room	Committee and Participants
	Theme 1: Agricultural Product Technology	11 Participants (Oral Presentation)		(next sheet)
	Chair : Dr. Agr. sc. Nurhasanah, SP., M.Si. & Ir. Sopiaena, M.P., Ph.D		Grandroom Melati	Committee and Participants
	Theme 2: Agroecotechnology	25 Participants (Oral Presentation)		(next sheet)
	Chair : drh. Fikri Ardhani M.Sc.		Pangadan Room	Committee and Participants
	Theme 3: Animal Husbandry	6 Participants (Oral Presentation)		(next sheet)
	Chair : Ir. Ndan Imang, MP., Ph.D.		Batulepoq Room	Committee and Participants
	Theme 4: Agribusiness	11 Participants (Oral Presentation)		(next sheet)
16.00-16.15	Coffe Break			
16.15 - 17.00	Closing Ceremony	Closing Remaks from conference chairman of International on Food, Feed, and Fuel 2018 Announcing of the best presenter and the best poster	Grandroom Melati	Committee

14 NOVEMBER 2018

Time	Agenda	Description	Room	Information
07.30 - 08.00	Registration			Committee
08.00 - 15.00	Mahakam River Tour			Committee

ORAL PRESENTATION OF ICTAFF 2018

THEME A: AGRICULTURAL PRODUCT TECHNOLOGY ROOM MALOI

SESSION 1

Time	Code	Title
13.00-14.00	O1-002	Green tea daily consumption reduced free radicals on moderate smokers RosyanneKushargina, RimbawanRimbawan, Budi Setiawan
	O1-005	A plain design of electrolysis apparatus to reduce ammonia in effluent from tofu industry SulistyoPrabowo, and Muflihah
	O1-030	Glycemic Index and Functional Properties of Jelai (<i>Coixlacryma-jobi</i> L) BernatalSaragih
	O1-034	Fermentation and sensory profile of durian yogurt as a symbiotic yogurt with sugar and skim milk formulation AswitaEmmawati, Marwati, Yuliani, RiniRahmawati,
	O1-037	β -carotene Loaded Nanostructured Lipid Carriers for Increased Bioaccessibility and Antioxidant Activity MiftakhurRohmah, Sri Raharjo,ChusnulHidayat, and Ronny Martien

SESSION 2

Time	Code	Title
14.00.15.00	O1-041	The antioxidant activity of karamunting fruit as natural dyes and preservative foods Elly Jumiati
	O1-042	The nutrition value and characteristics of jagaq PaluphyEkaYustini, BernatalSaragih
	O1-043	Design of soft jelly candy with addition of edible birds nest (<i>Collocalia</i> sp.) as a functional food rich in sialic acid Krishna PurnawanCandra, FirzaSarwani, Muhammad Hasan
	O1-044	Habiskanwal as the local movement to reduce the wasting food habit of Samarinda citizen Bella Arisandy, Joko Permono, DadangIlham K. Mujiono
	O1-050	Effectivity of The Addition of Sugar and Na-CMC (<i>Natrium Carboxy Methyl Cellulose</i>) on The Physico-Chemical Properties of The Nectar of Ambon Banana (<i>Musa paradisiaca</i> Linn) HudaidaSyahrumsyah and MaulidaRachmawati
	O1-053	Oral Glucose Tolerance Test of <i>Eleutherinepalmifolia</i> Extracts on Sprague Dawley Male Rats Andi Early Febrinda
	O1-054	Improvement <i>Pleurotus ostreatus</i> Spawn Quality Using Heat-Tolerant Plastic Bag as a Container Sitompul Afrida

THEME B: AGROECOTEHCNOLOGY
ROOM GRANROOM MELATI

SESSION 1

Time	Code	Title
13.00-14.00	O2-006	Effectiveness of tobacco extracts as vegetable pesticides with various concentrations in control of pest <i>dasychirainclusa</i> Sri Ngapiyatun, NurHidayat, FadliMulyadi
	O2-008	Light interception and yield of some maize hybrid varieties grown in a double row pattern under different urea treatments I KomangDamar Jaya, Sudirman, I WayanSudika
	O2-009	The determination of nitrogen status in leaf tissues to make a fertilizer recommendation and predict mangosteen yield OditF.Kurniadinata, RoedhyPoerwanto, Anas D. Susila
	O2-010	Carrying capacity of native pasture on coal post-mining land TaufanPurwokusumaning Daru, HadiPranoto, Novia Indah RisqiAnggraini, Abdul Syamad Ramayana, FikriArdhani
	O2-012	Zinc (Zn) fertilization on lowland rice at different paddy fields Rusdiansyah, Sadaruddin, Sayudi

SESSION 2

Time	Code	Title
14.00-15.00	O2-013	Expert System for Pest and Disease Diagnosis of Pepper Plants Using Shafer Dempster Method Dedy Cahyadi, PututPamilihWidagdo, NeniRiskUtami
	O2-014	Effect of <i>Beauveria bassiana</i> Against the Population of Pests and Natural Enemies on Rice Plants (<i>Oryza sativa</i> L.) in Samarinda Rosfiansyah, SopiAlena
	O2-015	The soil properties effect on the existence of entomopathogenic nematodes in the palm oil rhizosphere with sediment in kutaikartanegara Suyadi
	O2-016	Microbia Diversity at rhizosphere of Rubber Plant: A Recent Study InKutaiKartanegara Regency SopiAlena, Suyadi, Rosfiansyah, and A. Suryadi
	O2-018	The Effect of Kerinyuh Fertilizer with Mol combination on RAWIT Growth and results Riama Rita Manullang, Daryono, Mujibu Rahman, Rusmini

SESSION 3

Time	Code	Title
15.00-16.00	O2-020	Compost Application of Oil Palm Empty Fruit Bunches with the Best Liquid Microorganism (LM) Type for Improving the Soil Properties of Coal Mine and Their Effect on Green Pakcoy Plant <i>Brassica juncea</i> L NurulPuspitaPalupi, Roro Kesumaningwati, Ni'matul Jannah Akhsan, Made Jaya Santiya
	O2-021	Increasing soil chemistry using ex-coal mines and agricultural waste compost (corn waste) with bio-activator snail and <i>Trichoderma</i> on upland rice Roro Kesumaningwati, Nurul PuspitaPalupi, and Surya winda
	O2-023	the exploration of crops and local fruits production potential on tropical forest garden east Kalimantan HadiPranoto, Penny Pujowati, Donny Donanto
	O2-025	intervention model on development of organic agricultural systems (a case study of organic rice farmers groups in kediri district) WidiArtini
	O2-026	plant diversity analysis of durian (<i>DuriozibethinusMurr</i>) cepoko based on morphological characters EndangYuniastuti, RizqaPerdana Putra, Sukaya, danMarshelina Noor Indah Delfianti

**THEME C: ANIMAL HUSBANDRY
PANGADAN ROOM**

SESSION 1

Time	Code	Title
13.00-14.00	O3-003	Conservation Study of Kalang Buffalo's in East Kalimantan Province As an Indonesian National Genetic Resources Suhardi, TaufanPurwokusumaning Daru, Muh. IchsanHaris, Mariyah, Moch. IndraWijaya, PijugSumppunn, SuwitWuthisuthimethavee
	O3-004	Comparative evaluation of physicochemical and oxidative changes of <i>Semitendinosus</i> and <i>Vastus lateralis</i> from Thai native cattle (<i>Bosindicus</i>) slaughtered by Halal traditional method Ari Wibowo, DewiCahyaningtyas, TaufanPurwokusumaning Daru, Roosena Yusuf, WorawanPanpipat, SiripornRiebroy, and ManatChaijan
	O3-007	Quality silk yarn with feed developed in vitro Faradilla, Emi Malaysia
	O3-011	Reclamation of coal mining mine on growth and quality kenaf fiber (<i>hibiscus cannabinus</i> l) Roby, Yuanita, F.SilviDwiMentari
	O3-017	The effect of addition of mangrove fruit extract (<i>sonnerati</i> asp) to organoleptic quality and antioxidant activity of pasteurization cow's milk Arifismanto, NisaUlkarimah
	O3-024	Morphometrics comparison of local chicken supported development make food sovereignty in East Kalimantan Surya NurRahmatullah, Z.Efendia, H. Mayulua F. Ardhanian, and A. Sulaiman
	O3-025	Potential of cover crops as an animal food at post mine coal Muhammad Rizki Fadillah1), Iin Susilawati2), dan Budi Ayuningsih2
	O3-026	a study of nunukan rooster sperm quality characteristics changes in different type of dilution stored at 40 c Fikri Ardhani1,2), Surya Nur Rahmatullah1), Jusyenti Simanullang1)

THEME B: AGROECOTECHNOLOGY
PANGADAN ROOM

SESSION 2

	Code	Title
14.00-15.00	O2-027	prospect of "ganyong," the fluff that almost forgotten Rina Dewi
	O2-028	early maturity of black rice cempo m4 selection result gamma irradiation 200 gray Eveline, Nandariyah, Parjanto
	O2-031	Water Requirement for Eggplant (<i>Solanum Melongena</i> . L) Ratna Shanti
	O2-032	Various Picloram Concentrations for Inducing Somatic embryos in various explant ages of peanut EllokDwiSulichantini
	<u>O2-033</u>	Genetic Quality Standards Appropriate with The Development of Science and Technological in The Perspective of Environmental Law SitiKotijah, Suradiyanto, and Fitryah
	O2-034	the role of stomatal density and rate leaf water loss as a drivendrought tolerance in peanut Adisyahputra, Sudarsono, SatriyasIlyas, KukuhSetiawan

SESSION 3

	Code	Title
15.00-16.00	O2-038	Antibacterial effects of <i>Cymbopogon citratus</i> and <i>Amomum compactum</i> Essential Oil by Self-nanoemulsifying drug delivery system (SNEDDS) against <i>Salmonella typhimurium</i> FNCC-0050 Tri Ujilestari, Ronny Martien, BambangAriyadi, NanungDanaDono, and Zuprizal
	O2-039	Somatic embryo induction of East Kalimantan local upland rice (<i>Oryza sativa</i> L.) cultivar and in vitro selection against salinity Muktirianur, BambangSupriyanto, WidiSunaryo and Nurhasanah
	O2-047	Growth And Disease Resistance Of Kepok "Yellow" Banana Post Acclimatization Seedling In Nursery With Nasa Liquid Organic Fertilizer And Trichoderma Ratna Nirmala, Ratna Shant
	O2-051	The influence of flooding to soil ph and the content of soil phosphorus at tomato's plant Rabiatul Jannah, Odit Ferry Kurniadinata
	O2-052	Fertilizer Application on The Growth of The Short Age Sugar Palm (<i>Arengapinnata</i>) and Cocoa Plant (<i>Theobroma cacao</i> L.) on Lane Planting System Yetti Eldar

**THEME 4: AGRIBUSINESS
BATULEPOQ ROOM**

SESSION 1

Time	Code	Title
13.00-14.00		
	O4-001	Contribution of household income to accelerate oil palm replanting independently at paser regency, EastKalimantan Mariyah, YusmanSyaukat, Anna Fariyanti
	O4-019	Production of kenaf fiber from shrimp shells compost for handcrafts with natural dyes Rusmini, DWINITA AQUASTINI, RIAMA RITA MANULLANG, DARYONO, ALI SADIKIN
	O4-022	Analysis income and marketing of business stick dragon fruit in Balikpapan city case study on avan food product in sepinggan village, south Balikpapan district FitriMonasari, Syarifah Maryam, and Nike Widuri
	O4-029	Area characteristics and management of palm oil plantation of community in kecamatanMuarabadak AKHMAD SOPIAN, ZAINUDIN, and YUSRIANSYAH
	O4-035	Reformulation of The Legal Protection of Agricultural Land Sustainable Food in the Coal Mining Exploitation area of East Kalimantan HarisRetnoSusmiyati, Rahmawati Al Hidayah

SESSION 2

Time	Code	Title
	O4-036	Analysis of beef cattle business in swamp land in Kecamatan Kota BangunKabupatenKutaiKartanegara Mursidah, TaufanPurwokusumaning Daru, SyahnurAlhusna
	O4-036	The Level Of Farmers Group Member Participation In RDK AND RDKK Preparation Midiansyah Effendi, FirdaJuitadanAdiDarmanto
	O4-040	Agronomic and economic analysis of shallot farming system with eco-friendly pest control approach BaiqNurulHidayah
	O4-046	Productivity and farmers income of soybean farming practices with various jajarlegowo sowing systems BaiqNurulHidayah
	O4-048	The Utilization of Cyber Extension for Improving Capacity of Agricultural Extension Worker in Loa Kulu Districts of KutaiKartanegara Regency. Dina Lesmana, Miftakhu Khoirun Nasta'in
	O4-049	Technical Efficiency Analysis of Lowland Rice Farming (Oryza sativa L) Rice Fields in Bukit Raya Village, TenggaraSeberangSubdistrict, KutaiKartanegara Regency TettyWijayanti, M. ErwanSuriaatmaja, and Erma Dwi Lestari

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ABOUT KEYNOTE SPEAKER





Assoc. Prof. Dr. Somsak Maneepong
(Walailak University Thailand)

Dr. Somsak Maneepong is an Associate Professor and a lecturer at School of Agricultural Technology, Walailak University, Thailand. He graduated from Prince of Songkla University, Thailand, and received his master degree in Agricultural Chemistry from Tottori University, Japan. He has completed his PhD in Agricultural Chemistry from Kyushu University, Japan. Prior to joining Walailak University, he was a lecturer at Faculty of Natural Resources, Prince of Songkla University, Thailand. He was appointed as visiting Professor at Faculty of Agriculture and Forestry, Vinh University, Vietnam, and Faculty of Agriculture, Sriwijaya University, Indonesia. He currently is involving in some research projects on soil and plant analysis, plant nutrition, and development of agriculture method regarding to the soil and plant quality analysis collaborated with some international institution such as OSTOM (France), and JSPS (Japan). The research projects that he involved funded by The Thailand Research Fund. He has published more than 20 articles in accredited journals and proceedings.





Prof. Xuming Huang, Ph.D
(South China Agricultural University)

His research scope covers: rhythmic growth of shoots in evergreen fruit trees and its regulations; Ca nutrition in fruits, fruit developmental disorders and their control; carbon nutrition production and utilization in fruit trees; and water relations in fruit crops. He has published over 60 papers in international and domestic journals. He was a member of scientific committee in the 2nd, 3rd and 4th international symposium on litchi and longan, in the 3rd and 4th international symposium on tropical and subtropical fruits, the first international symposium on tropical horticulture and the 7th international symposium on mineral nutrition in fruit crops. He is now the chairman of litchi workshop, section of tropical and subtropical fruits, ISHS. He is the editorial board member of *Scientia Horticulturae*, *Journal of Fruit Science*, and *Scientia Horticulturae Sinica*.





**Prof. Dr. Irwandi Jaswir
(International Islamic University Malaysia)**

Born in Medan, North Sumatra, December 20, 1970; 47 years old is an Indonesian scientist and biotechnology expert. He worked as a research coordinator at the Halal Industry Research Center, Malaysia International Islamic University (IIUM), Kuala Lumpur. Irwandi was the second winner of the 2009 Asia Pacific Young Scientific Award in Bangkok, Thailand, which was initiated by Scopus (the largest database site for scientific journals and citation indexes) and through judgments from a jury consisting of professors and international experts. He competed with dozens of other young researchers from 23 Asia Pacific countries, including Japan, China, Singapore, Australia, Malaysia, India, Taiwan, Hong Kong, Thailand and others. In accordance with his expertise, Irwandi competed in agriculture and natural resources in the event.

In 2010, Irwandi won another prestigious award, the Best Innovation Award at the 2010 World Halal Research Summit (WHRS) forum in Kuala Lumpur, Malaysia with his research work entitled Nano-Structural Properties of Alternative Collagen for Halal Industry (Structural Properties Nano Collagen Alternative for Halal Industry). The annual event related to the halal industry was attended by hundreds of researchers from all over the world and only chose three people as the best. Irwandi Jaswir who has been a professor since 2009 has also produced dozens of scientific articles in international journals and conferences as well as dozens of popular scientific articles in various mass media and five book chapter articles in international scientific books.

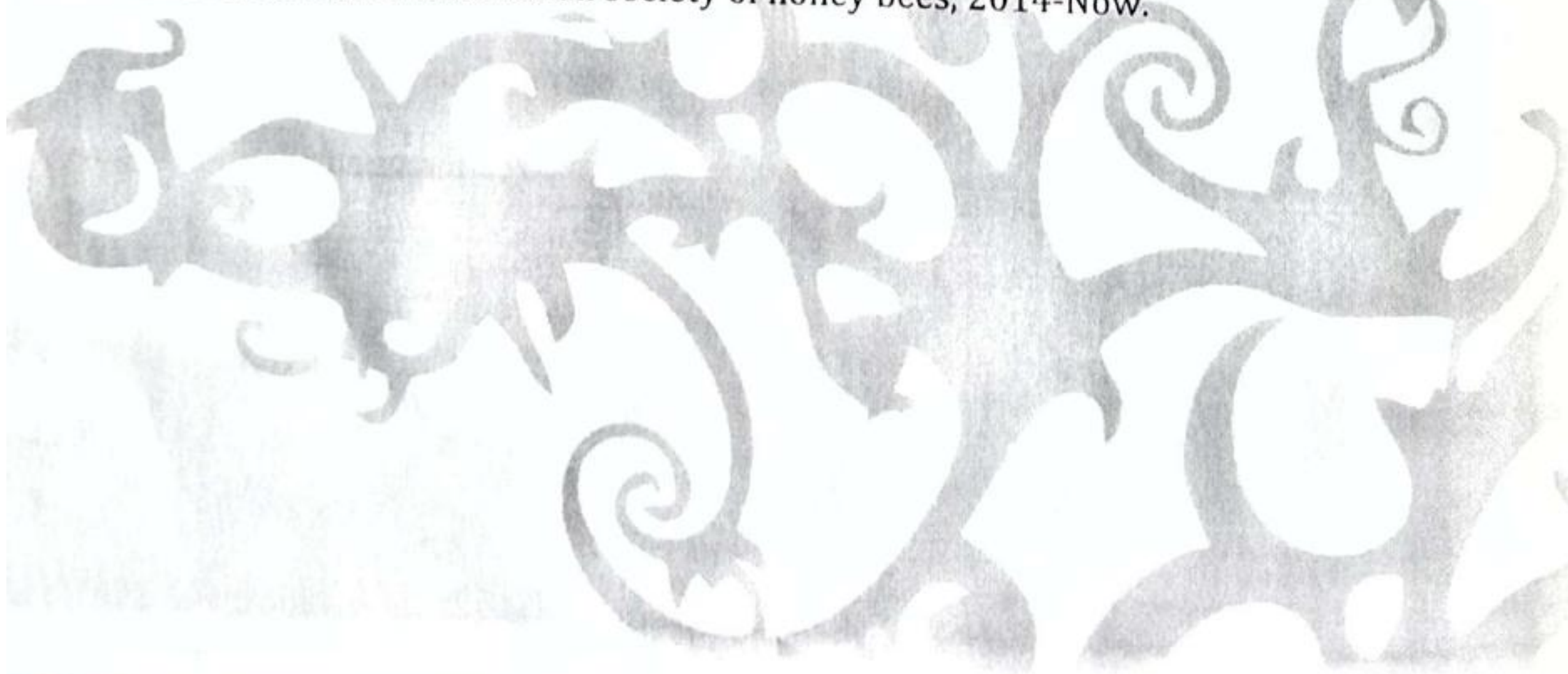


**Prof. Dr. Ir. Ali Agus, DAA, DEA
(Gadjah Mada University, Indonesia)**

Ali Agus is Dean of the Faculty of Animal Science and Professor in the Department of Animal Nutrition. His research program focuses on Environmental Chemistry, Catalysis and Green Chemistry. His current project is 'essential oil as feed additive in broiler'.

Prof Ali Agus obtained his PhD in 1996 from the Ecole Nationale Superieure Agronomique de Rennes (ENSA), Rennes, France, following Diploma 4 and graduate studies at the Ecole Nationale Superieure Agronomique de Rennes (ENSA), Rennes, France, and undergraduate from Gadjah Mada University (Indonesia) in 1989.

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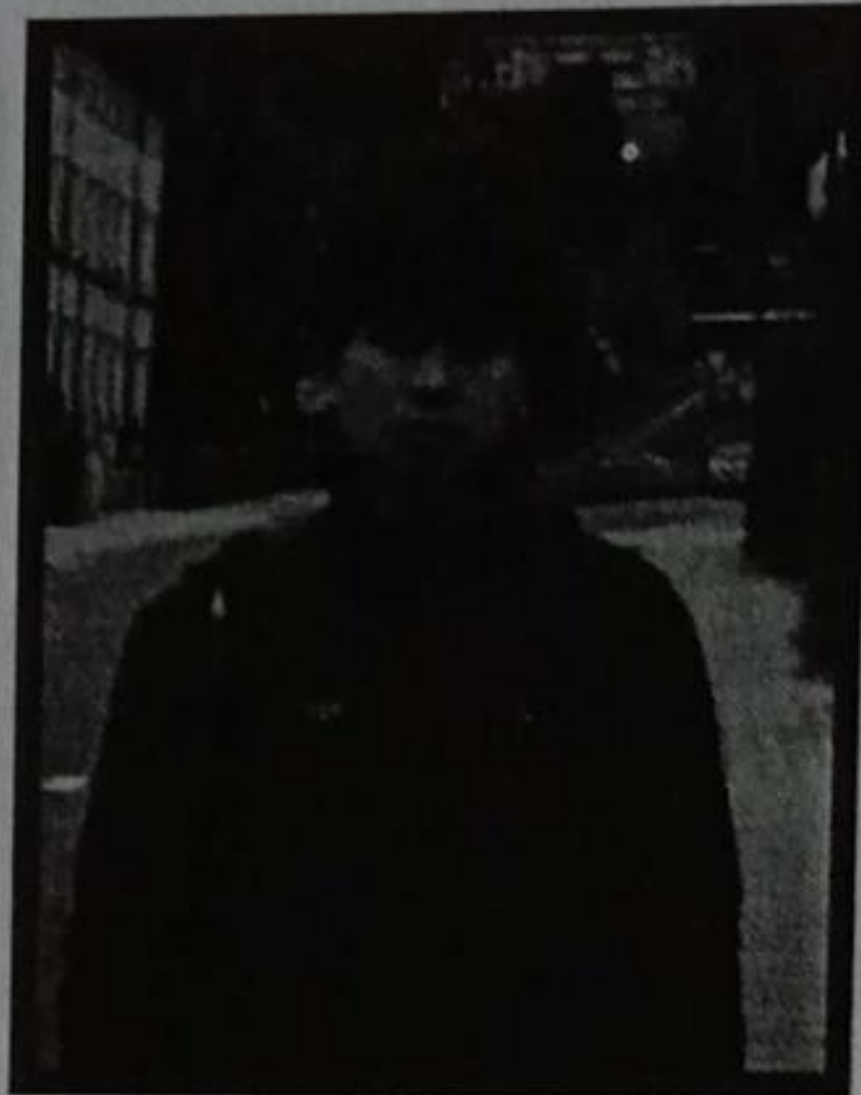




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ABSTRACTS



Genetic Quality Standards Appropriate with The Development of Science and Technological in The Perspective of Environmental Law

Abstract

Siti Kotijah SH. MH., Dr. Suradiyanto, SH., M.Hum., Fitryah,S.H.

A good and healthy environment is a basic right of every Indonesian citizen mandated in Article 28 H paragraph (1) of 1945 Constitution of the Republic of Indonesia. It is to guarantee the environmental quality against the environmental pollution, environmental quality standards, as one of the preventive instruments of pollution and environmental damage, including genetic quality standards. Genetic quality standards, the types those are appropriate with the development of science and technology, where everyone is permitted to throw waste into the environmental media by fulfilling the requirements. The regulation of genetic quality standards is regulated in Article 20 paragraph (2) G of Law No. 32 of 2009 concerning Protection and other Environmental Management, Law No. 5 of 1990, Act 4 of 2006, and Law No. 11 of 2013 concerning Nagoya Protocol and PP No. 21 of 2006. Genetic management benefits humans if it is used appropriately. On the other hand, the developing science and technology produces hazardous and toxic waste (B3), which is at risk for the life environmental, health, and various pest threats, disease that interfere the sustainability of natural resources. The result is on the increasing of climate changing and the global warming which can threat the genetic resources needed that has been used until this time to fulfill food needed in Indonesia. Therefore

For this reason, the frequency of resources for people who are not possible is not used by those who are not responsible with the right application. Therefore, the protection of genetic resource by the government is important to be done in order to prevent the extinction and to prevent abused by people who are not responsible with the firm sanction.

Keywords: Environmental Law, Quality Standards, Genetics.

Introduction

A. Background

Genetics is the study of genes, namely the factors that determine the nature of an organism. In the biological process of life, there is a metabolism that takes place in the cell. Determination of the nature of organisms is carried out by genes by controlling the chemical reactions that make up a metabolic trajectory. In genetics is studied the structure, the process of formation and inheritance of genes and also the mechanism of expression in controlling the nature of organisms¹. There are several types of genetics, namely plant genetics, animal genetic resources and genetic engineering.

Genetic management benefits humans appropriate with the development of science and technology, among others, enhancing the quality of life and changing the human lifestyle. The use of chemical-based products has increased the production of hazardous and toxic waste materials. This requires the development of a safe disposal system with little risk for the environment, health, and the survival of humans and other living things.

On the other hand, developing science and technology produce hazardous and toxic waste (B3), at risk for the environment, health, and various pest threats, diseases that disrupt the sustainability of genetic resources. This caused the increasing of climate change and global warming which can threaten the availability of the genetic resource which has been used to fulfil the food needed in Indonesia.

In the perspective of environmental law, there is an environmental prevention instrument; one of it is environmental quality standards. In that quality standard, one of the genetic quality standard which is included in other types of quality standards appropriate with the development of science and technology. Basically, everyone is legally permitted to dispose of waste into the environmental media by fulfilling the requirements, but there is a parameter so that there is no pollution happened.

The regulation of genetic quality standards is regulated in Article 20 paragraph (2) G of Act No. 32 of 2009 concerning Protection and other Environmental Management, and spreading in several Acts namely: Act No. 5 of 1990, Act 4 of 2006, and Act No. 11 of 2013 concerning Nagoya Protocol and PP No. 21 of 2015.

The existing genetic quality standard dispositions still do not give a deterrent effect on the perpetrators. In fact the development of science and technology related to genetics continues to grow, and produces hazardous and toxic (B3) material, which is at risk for the environment, health, and various threats of pests, and diseases. This makes the quality of the environment declining; threatening the survival of human life and other creatures, for that the environmental protection and management is important and consistent for all stakeholders.

B. Research Problem

From the research problem above, other environmental quality standard problems, appropriate with the development of science and technology, including the genetic quality standards. There are standards and parameters regulated in the Law of Protection and Environment Management, for this reason how the environmental prevention instruments are related to genetic quality standards in the perspective of environmental law.

C. Research Objectives

The purpose of the study is to find out the environmental law prevention instruments in reducing the decline in environmental quality with standards and parameters related to genetic quality standards in the perspective of environmental law.

D. Research Methods

The research conducted was normative, with a legislative approach, a concept approach, and a case approach, with legislation primary legal materials, and field data as secondary data that supported legal arguments in this study.

E. DISCUSSION

E.1. Legal Construction of genetic quality standards

Genetics derived from the Greek language, which means "giving birth" is an important branch of biology at this time¹. This science studies various aspects concerning the inheritance of traits and nature's variations in organisms and sub-organisms (such as viruses and prions). Some also briefly say, genetics is the science of genes. The name "genetics" was introduced by William Bateson in a personal letter to Adam Chadwick and he used it at the 3rd International Conference on Genetics in 1906².

The history of genetic development began in the 17th century, people believed that life emerged spontaneously. This opinion, known as *generation spontanea*, was refuted by Francesco Redi (1621-1697), Lazzaro Spallanzani (1729-1799), and Louis Pasteur (1822-1895), who considered that living organisms originated from organisms that lived earlier. Another opinion, called *ovisma*, assumed that an ovum had a female organism having an important role as a carrier of hereditary factors that would be passed on to the next generation. In this case, male organisms produce liquids whose function is to activate the development of ovum³.

Genetics evolved after the invention of the microscope and the rediscovery of Mende's work, became a standard in the use of scientific methods in science or science. There are several stages of genetic development⁴:

1. 1859 Charles Darwin published *The Origin of Species*, as the basis for genetic variation.
2. 1865 Gregor Mendel submitted a Trial text on Plant Crosses;

¹ *Essential Cell Biology: An Introduction Molecular Biology of the Cell*. New York: Garland Publishing, Inc.

² *Ibid*

³ <http://repository.uinjkt.ac.id/dspace/bitstream/123456789/32433/1/Lebba%20Kadorre%20Pongsibanne.pdf> di akses Jumat, 10 September 2018 Pukul 03.06WITA

⁴ *Genetics Engineering. The Science of the Decade*. Canberra: The Australian National University Magazine Gibbs, A. Dkk. 1982.

(Austro-Hungary), Carl Correns (Germany), and Erich von Tschermak

(Austro-Hungary) was the beginning of classical genetics;

5. Chromosomes are known to be units of genetic inheritance;
6. 1905 British biologist William Bateson introduced the term 'genetics';
7. 1908 and 1909 Laying the basis of population genetic theory by Weinberg (doctor from Germany) and separately by James W. Hardy (British mathematician) was the beginning of population genetics;
8. 1910 Thomas Hunt Morgan showed that genes were on chromosomes, using fruit flies (*Drosophila melanogaster*) was the beginning of cytogenetic;
9. 1913 Alfred Sturtevant made the first genetic map of a chromosome;
10. 1918 Ronald Fisher (British biostatistics) published on the correlation between relatives on the supposition of Mendelian inheritance (freely meaning "Relation between relatives based on Mendelian inheritance"), which ended the feud between biometric theory (Pearson et al.) and Mendel's theory as well as initiating the synthesis of both of these were the beginning of quantitative genetics;
11. 1927 Physical changing in genes was called mutations;
12. 1928 Frederick Griffith discovered a carrier molecule that could be transferred between bacteria (conjugation);
13. 1931 Crossing caused recombination;
14. 1941 Edward Lawrie Tatum and George Wells Beadle showed that genes encoded proteins, which were the beginning of the main dogma of genetics;
15. 1944 Oswald Theodore Avery, Colin McLeod and Maclyn McCarty isolated DNA as material genetic (they call it the principle of transformation);
16. 1950 Erwin Chargaff showed the general rules that apply to four nucleotides in nucleic acids, for example adenine tended to be as much as thymine;
17. 1950 Barbara McClintock discovered transposons in corn;
18. 1952 Hershey and Chase proved that the genetic information of bacteriophages (and all other organisms) was DNA;

19. 1953 The puzzle of the DNA structure was answered by James D. Watson and Francis Crick in the form of double helix, based on X-ray diffraction images of DNA from Rosalind Franklin being the beginning of molecular genetics; and
20. 1956 Jo Hin Tjio and Albert Levan ensured that the human chromosome was 46.

From this division, genetics develops both as pure science and applied science. These branches of knowledge are formed primarily as a result of the deepening of a particular aspect of the object of study.

E.2. Genetic Quality Standard Disposition

- a. Convention on Biological Diversity (Act No. 5 of 1990 concerning Biodiversity and Ecosystems)

The Convention on Biological Diversity (CBD) is a legally binding International Agreement adopted at Rio De Janeiro in June 1992 which was inspired by the growing commitment of the world community to sustainable development. In Article 8 J the biodiversity convention requires member states of the Convention on Biological Diversity to comply with national legislation by respecting, protecting and maintaining knowledge, innovations, and practices of indigenous and local communities that reflect traditional lifestyle, appropriate with the conservation and sustainable use of biodiversity and extending its determination more broadly with the approval and involvement of knowledge owners of innovations, and such practices are encouraging equitable sharing of benefits resulting from the utilization of knowledge, innovations, and that kind of practices . It means that the development of science and technology in the field of biodiversity is developed appropriate with the usefulness or benefits of a country.

- b. Access and Distribution of Profits on Utilization of Genetic Resources Regulated in the Bonn Guidelines

The Bonn Guidelines are guidelines for determining the steps in the process of access and distribution of profits on the basis of the use of genetic resources, with an emphasis on the obligation for users to obtain approval on the basis of initial information from the provider country (Prior Informed Consent)⁵. In addition, it regulates the requirements of Mutual Agreed Terms and determines the roles and responsibilities of both users and providers of genetic resources and the importance of stakeholder involvement. The Guidelines also regulate the determination of incentives, accountability, verification and dispute resolution. This guide is in developing strategies regarding access and benefit sharing for the use of genetic resources, determining the steps in the process to gain access to genetic resources and sharing benefits from their use.

- c. Act Number 4 of 2006 concerning Agreement About Plant Genetic Resources for Food and Agriculture (Treaty on Plant Genetic Resources for Food and Agriculture).

An international agreement on plant genetic resources for food and agriculture (SDGTPP) was addressed by the Food and Agriculture Organization (FAO) on 3 November 2001 at the 31st session of the United Nations Food and Agriculture Organization (UN-FAO) in Rome⁶. In general, PGRFA is a multilateral system of access and benefit sharing on the use of genetic resources (Multilateral System on Access and Benefit Sharing) that supports breeders and farmers.

The SDGTPP agreement gives acknowledgement on the rights of farmers, regulated in Article 9 which is a continuation of the Nairobi Conference adopted from the biodiversity convention and FAO Conference in 1993, Article 9 acknowledges the contribution to indigenous / traditional communities and farmers for conservation and sustainable development on the genetic resources of plants, especially food and agricultural products and provide responsibility for realizing the rights

⁵ <http://repository.uinjkt.ac.id/dspace/bitstream/123456789/32433/1/Lebba%20Kadorre%20Pongsibanne.pdf> di akses Jumat, 23 Maret 2018 Pukul 03.06WITA

⁶ Mila Hanifa 2012, *Op. Cit.* hlm 97

Indonesia as a country that is very rich in biodiversity, needs to be conserved and utilized to carry out sustainable development in order to improve the welfare of all people, for that reason to ratify and enact in Act Number 4 of 2006 concerning Agreement about Plant Genetic Resources for Food and Agriculture (Treaty on Plant Genetic Resources for Food and Agricultural). The point is the plant genetic resources continues to experience declining due to the low attention and utilization, and also changes in traditional agricultural practices.

On the other hand, in the changing environment and the dynamics of consumer demand, there needs to be a reserve of plant genetic resources for the recovery of plants in providing community welfare. Furthermore, it is encouraged to provide plant genetic resources in an effort to preserve and utilize sustainable genetic resources.

d. UU no. 11 of 2013 concerning Nagoya Protocol

The Nagoya Protocol is prepared based on the principles of international law, namely countries that have sovereignty and sovereign rights to exploit natural resources appropriate with environmental policies and development, and also have the responsibility to ensure that activities in their jurisdiction or control do not cause harm to the environment of other countries or regions outside the jurisdiction of the country concerned.

Indonesia, which has abundant genetic resources and traditional knowledge and has economic value, needs to be preserved, to developed and utilized for the prosperity of the people. Act No.11 of 2013, as access to genetic resources and traditional knowledge related to genetic resources must be given based on the approval and provider of genetic resources from conventional knowledge of the country.

The use of genetic resources provides fair and balanced benefits to providers of genetic resources and conventional knowledge for Indonesia by entering Nagoya Protocol on Access the Genetic Resources and the Fair and Equitable Sharing of Benefits From Their Utilization to the

Convention on Biological Diversity (Protocol Nagoya on Access to Fair and Balanced Genetic Resources and Profit Sharing from Utilization of the Convention on Biological Diversity)⁶, which regulates the process of access and fair and balanced distribution of benefits to genetic resource providers.

- e. Government Regulation of the Republic of Indonesia Number 21 of 2005 concerning Biosafety of Genetically Engineered Products

Biosafety genetically engineered products are environmental safety, food safety and / or safety of genetically engineered feed products. Utilization of biodiversity through modern biotechnology with the results of Genetic Engineering Products (PRG) provides an opportunity to support agricultural production, food endurance and improve the quality of human life.

This regulation aims to improve the used result and the used energy of Genetic Engineering (PRG) products for the welfare of biological resources, consumer protection, legal certainty and certainty in doing business.

- f. The Government Regulation of Indonesia Number 48 of 2011 concerning Animal Genetic Resources and Animal Breeding

Genetic Resources (SDG) Animals are managed through utilization and conservation activities. Utilization of Animal SDGs is carried out through cultivation and breeding, while Animal SDG preservation is carried out through conservation in their habitat and / or outside their habitat and other efforts such as land conservation.

Utilization of SDG Animals is used as one of genetic material for the formation of germs. The government establishes livestock breeding policies to encourage the availability of certified livestock germs and supervise the procurement and distribution in the context of sustainable livestock development.

- g. Minister of Agriculture Regulation Number: 67 / Permentan / Ot.140 / 12/2006 concerning Preservation and The Use of Plant Genetic Resources

Plant Genetic Resources is the priceless asset of state, its existence is spread in various places, and it is an important basic material to be used in breeding activities to obtain new superior plant varieties for the purposes of Preservation and Utilization of Plant Genetic Resources, to maintain the existence of diversity and the potential of it needs to be done by doing the activities of searching, collecting, breeding and development, to fulfil the breeding needs which is required and also the Genetic Resources of Plants originating from the outside of Indonesia with exchange way.

E.3 Preventive Instruments in Genetic Quality Standards in The Perspective of Environmental Law.

Protection of genetic resources is mandated in legislation, both Article 33 paragraph (3), Article 28 H paragraph (i) of the 1945 Constitution of Indonesia, Article 20 paragraph (2) G of Act No. 32 of 2009 concerning Protection and other Environmental Management and legislation referred to above. It becomes the basis of instrument prevention for environmental and pollution. Genetic quality standards and other types of quality standards appropriate with the development of science and technology, where everyone is permitted to dispose of waste into the environmental media by fulfilling the requirements.

In the determination of existing genetic quality standards, how many B3 waste standards that has been disposed into the environmental media will be known, and still will be the carrying capacity and capacity of the environment. Basically by maintaining the standard of environmental quality, it will protect the pollution and environmental damage, it means fulfilling human rights to a good and healthy environment.

The problem of decreasing environmental quality due to quality standards that exceeds more than the available of environmental media is the responsibility of all parties, including the government, stakeholders, entrepreneurs, and the public. The environmental media has a standard of environmental damage

and pollution. Prevention and / pollution of the environment must be done with coordination, systematic, and law enforcement for the perpetrators.

E.4. Instrument to Prevent Standard Criteria for Seagrass Beds Damage in the Environmental Law

A good and healthy environment is a basic right of every citizen guaranteed by the State Article 28 H paragraph (1) of the constitution in the Unitary State of Indonesia. To guarantee this right, instruments for preventing pollution and environmental damage are carried out, including the media environment used, related to genetic quality standards that produce B3 exceeding the limit.

To ensure environmental quality against environmental pollution, there are environmental quality standards, as one of instrument to prevent pollution and environmental damage, including genetic quality standards. Genetic quality standards, each person is permitted to dispose of waste into the environmental media by fulfilling the requirements. The regulation of genetic quality standards is regulated in Article 20 paragraph (2) G of Act No. 32 of 2009 concerning Environmental Protection and Management.

Prevention and environmental damage instruments in the Act of Environmental Protection and Management, one of it is in the environmental quality standard. Determination of the occurrence of environmental pollution is measured through genetic quality standards, for genetic resources. Everyone is allowed to dispose waste into the environmental media with the requirement to fulfilling the environmental quality standards and get permission from the Minister, Governor, Mayor or Regent appropriate with their authority.

Regarding B3 waste generated in the utilization of genetic resources, in Article 88 concerning the Act of Environmental Protection and Management states that every person whose actions, business and / or activities use B3, produces and / or manages B3 waste, and / or which poses a serious threat to the environment is liable to the absolute responsibility for losses that occur without

the need to prove the elements of error. The point is, if there is someone throwing B3 into the environmental media beyond the carrying capacity of the environment, there is no need to prove a mistake, because the evidence is clear.

Regarding to B3 waste, in the criminal provisions of the Environmental Protection and Management Act, Article 103 is regulated, "every person who produces B3 waste and does not carry out the management as in Article 59 paragraph (4), is punishable with the shortest prison of 1 (one) year and the longest is 3 (three) years and a fine of at least Rp. 1,000,000,000.00 (one billion rupiah) and a maximum of Rp. 3,000,000,000.00 (three billion rupiah). Article of criminal refers to Article 59 paragraph (4), related to B3 waste management must obtain permission from the Minister, Governor, or Mayor appropriate with their authority. The criminal provisions above is in order to provide a deterrent effect on B3 production related to the use of genetic resources.

F. Conclusion

The regulation of genetic quality standards is regulated in Article 20 paragraph (2) G of Act No. 32 of 2009 concerning Environmental Protection and Management, in the category appropriate with the development of science and technology. Environmental quality standards are permitted to be disposed in environmental media, suitable with the prescribed standards. The use of genetic resources provides benefits for humans, but on the other hand produces B3 waste that can interfere with the environment. Management of B3 without permission can be subject to criminal provisions in Article 102 of Act No. 32 of 2009 concerning Environmental Protection and Management.

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D.Website