



**SEAMEO BIOTROP**  
 Southeast Asian Regional Centre for Tropical Biology



# Annual Report

## FY 2019 - 2020



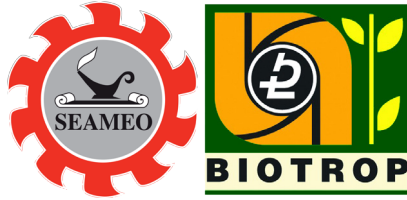


# SEAMEO BIOTROP

Annual Report FY 2019 - 2020

Southeast Asian Regional Centre for Tropical Biology  
Jalan Raya Tajur Km. 6  
Bogor 16134, Indonesia





## Vision

A Leading Centre in enriching and promoting the real values of tropical biology in Southeast Asia

## Mission

To provide scientific knowledge and build capacities of institutions and communities in conserving and managing tropical biology sustainably for the well-being of communities and the environment of Southeast Asia



# Governing Board Chairperson MESSAGE

First of all, I would like to congratulate SEAMEO BIOTROP for its tremendous achievements in the Fiscal Year 2019/2020. As the Chairperson of SEAMEO BIOTROP 58<sup>th</sup> Governing Board Meeting, I would like to convey my appreciation to SEAMEO BIOTROP for its hard work, innovations and contributions to increase its visibility in the Southeast Asian region.

Despite such intense competition among similar organizations, the Centre is able to conduct many significant research and training activities to address various tropical biology issues in Southeast Asia. SEAMEO BIOTROP is recognized, regionally and internationally, as a leading organization in the field of tropical biology.

On behalf of the Board, I would like to express our appreciation to Dr Irdika Mansur who has dedicated his time and efforts to manage SEAMEO BIOTROP. Under his Directorship, SEAMEO BIOTROP has been transformed in such a way to accommodate and serve all researchers, including teachers and students from vocational schools up to the graduate schools. This is proven by the significantly increasing number of MoUs, student internships and community visits to the Centre. Collaborations with universities and research centers to transfer technologies to vocational schools are among strategic programs of the Centre under his leadership. I hope that these good practices will continue with the next Director. I wish Dr Irdika all the best for his return to the Faculty of Forestry, Institut Pertanian Bogor (IPB-Bogor Agricultural University).

I would also like to thank the Government of Indonesia for the mandates and SEAMEO Secretariat for their continuous support and encouragement during the inter-center collaborations. Last but not least, I would like to express my gratitude to all SEAMEO BIOTROP officials, researchers and staff for the hard work and dedication.

**Prof Dr Arif Satria, SP, MSi**  
Rector, Institut Pertanian Bogor  
(IPB-Bogor Agricultural University)







## Director's message

The Fiscal Year 2019/2020 was a year that full of challenges. During the period of July to December 2019, we were still able to conduct our activities in normal situation. However, starting from March 2020, we have to modify most of our programs in accordance with the "New Normal" protocol due to the Covid-19 pandemic. The Centre also needed to reallocate the Centre's budget to support the new normal situation, among others online services to support staff working from home; and provision of food stuff, food supplements, cloth masks, sanitizers, for staff to maintain their health and safety.

During the fiscal year under review, the Centre has conducted a total of 46 research, 33 training and other learning activities, as well as published 6 books, a proceeding, 3 issues of BIOTROPIA Journal, 4 issues of BIOTROP Courier Newsletter, 3 educational videos, and various promotional materials in printed and digital versions. The number of implemented activities were not significantly affected by the Covid-19 pandemic, however, the Centre shall transformed most of face-to-face activities into online method. The research activities were also modified by limiting observations at the research fields and conducted indoor activities at the laboratories.

Due to national and international travel restrictions, the Centre had to call off most of official travel activities, including attendance in SEAMEO regular meetings. Fortunately, the Centre was still able to organize its 57<sup>th</sup> Governing Board Meeting in Cambodia, on 7 - 9 October 2019.

A special program initiated since 2018 namely School Fruit Garden for Education, Production, Genetic Conservation and Entrepreneurship in Agriculture Vocational Senior High Schools in Indonesia (SMARTS-BE) is still sustainably implemented. This program was proposed to be developed into regional level. Therefore, the Centre has submitted a working paper on this matter to be tabled during the 51<sup>st</sup> SEAMEO Council Conference in April 2020.

Following the Government of Indonesia's regulation during the Covid-19 pandemic, only fifty percent of the staff may work from office (WFO) and the rest work from home (WFH), in rotation. All staff are still in high spirit to keep all laboratories and general facilities well maintained. Staff alternately came to the office to maintain living collections, such as plants, insects, fish, microbes to keep them alive and growing. The pandemic has bring all staff together to face the situation. The number of visitors in one visiting session is limited to a maximum of 10 people. This policy has significantly reduced the number of visitors and interns to come to SEAMEO BIOTROP, especially starting from March 2020.

The Fiscal Year 2019-2020 is the last year for me to serve SEAMEO BIOTROP as the Director. I am proud that for the last 12 years of my term, the Centre has significantly improved on its programs and activities. The Centre also developed its human resources to enhance their skills and capabilities to ensure the Centre achieving its vision to be a leading Centre in enhancing and promoting the real values of tropical biology in the Southeast Asia. During the Center's 57<sup>th</sup> GBM, I have informed the Board that 12 years of serving SEAMEO BIOTROP is long enough as its Deputy Director for Administration and Director. I am thankful for the many opportunities given to me throughout those terms for contributing to the achievements of the Centre's vision and mission under two Five-Year Development Plans. I believe it is time for SEAMEO BIOTROP to welcome a new breed of leader who will make a difference in bringing further progress to the Centre.

The success of an organization is always supported by excellent resources, including its human resource, facilities and management. Thus, I thank our Deputy Directors, Managers, Researchers, Supervisors and all SEAMEO BIOTROP's staff for the hard work, dedication, innovation, and warm friendship that have crafted the 12 most beautiful years of my life.

I especially thank the Governing Board Members, Government of Indonesia, SEAMEO, and various institutions for the support rendered to SEAMEO BIOTROP activities. May our contribution make significant impact to the benefit of the people and nature, particularly in the Southeast Asian region.

I do hope that we all can go through this pandemic safely. I believe with the new leadership, SEAMEO BIOTROP will come through with more innovations and provide better services for communities and all stakeholders. If the Centre can survive for 52 years, there is no reason for it not to grow even stronger for the next 100 years.



**Assoc Prof Dr Irdika Mansur, MForSc**  
Director of SEAMEO BIOTROP



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# Executive Summary

For the last 52 years, SEAMEO BIOTROP has implemented its programs and activities to contribute significantly in addressing tropical biology issues, particularly in the Southeast Asian region. Every fiscal year, those programs and activities were developed and modified to adapt the recent internal and external issues.

Through the three main mandates namely: Research, Training and Other Learning Activities, and Information Dissemination, the Centre completed its annual program to achieve the Centre's vision "to be a leading Centre in promoting and enriching the real values of tropical biology in the Southeast Asia". In addition, the Centre developed its services which cover consultancies and products provision.

During the period of July to December 2019, the Centre's activities were conducted according to the plan. Some changes were made to meet the available budget or other resources. However, starting in March 2020, the Covid-19 pandemic occurred, therefore, the Centre shall modify some of its programs and activities and made necessary changes of the plan in accordance with the government regulations, national situation as well as national budget revision. Nevertheless, the Centre endeavored to implement programs to achieve its targets as planned.

SEAMEO BIOTROP Annual Report 2019/2020 presents the Centre's achievements in three Key Result Areas, namely: Regional Leadership, Regional Visibility, and Solid Resource Base.

## REGIONAL LEADERSHIP

During the fiscal year under review, the Centre conducted 26 research that were completed in December 2019 and 20 research projects, which will be completed by the end of 2020. For the period of July 2019 to June 2020, the Centre selected research proposals by the theme 'Food Sovereignty, Energy Resilience, Ecosystem Restoration, Climate Change and Disaster Mitigation, and Sustainable Use and Protection of Local Biodiversity in Southeast Asia'. The research projects are conducted in 12 provinces in Indonesia. Research that has been and will be carried out by SEAMEO BIOTROP, provides benefits to educators, academics, policymakers and private agencies, to answer identified biological problems related to the three (3) program thrusts of SEAMEO BIOTROP, i.e.: 1. Restoration of the Degraded Ecosystems; 2. Sustainable Management of Intensively Used Ecosystems/Landscapes; and 3. Conservation and Sustainable Use of Unique Ecosystems/Landscapes of High Biodiversity.

For the fiscal year 2019/2020, the Centre also funded 5 (five) National School Garden Action Research, 4 (four) research proposals submitted by PhD students from Institut Pertanian Bogor (IPB-Bogor Agricultural University), and 7 (seven) junior researchers/research assistants to support their research projects.

The Centre conducted 5 training of trainers, 1 national conference, 3 online quarterly, public seminars, 1 workshop, 5 online sharing sessions, 1 online talk-show, 2 online talk series, 3 online trainings, 4, online seminars, 1 FGD, 4 international conferences, 3 in-country trainings. A total of 3,202 individuals from government institutions, schools, universities, research centres and private sectors, benefited from these activities.

SEAMEO BIOTROP Services Laboratory, in order to ensure its technical competence in laboratory testing, has continued implementing and receiving formal recognition from the National Accreditation Committee (accreditation) with ISO/IEC 17025: 2017 (General requirements for the competence of testing and calibration laboratories) and accredited by KAN (National Accreditation Committee) with Accreditation Number: LP-221-IDN. The ISO/IEC 17025:2017 enables laboratories to demonstrate that they operate competently and generate valid results, thereby promoting confidence in their work both nationally and around the world.

## REGIONAL VISIBILITY

During the Fiscal Year 2019/2020, a total of 45 MoUs were signed, consisted of 1 completed MoU and 44 on-going MoUs. The 44 on-going MoUs are consisted of 6 MoUs with universities, 6 MoUs with non-profit organizations, 3 MoUs with government institutions, 6 MoUs with private companies and 23 MoUs between the Centre and Vocational Schools on the Agriculture Vocational School for Vegetable and Fruit Tree Orchard (SMARTS-BE) Program.

One of the MoUs with the government institutions was the MoU with the Center for Tropical Horticulture Studies (PKHT) of Institut Pertanian Bogor (Bogor Agricultural University-IPB) on the establishment of Agro-Eco-Edu-Tourism program. One of the MoUs with private companies was an international collaboration in the provision of Cottonii seaweed plantlets derived from tissue culture for MSC. CO., Ltd, a manufacture company of food additives, such as jelly and carrageenan from South Korea.

The Centre published 3 (three) issues of BIOTROPIA, an international scientific journal indexed by SCOPUS. The Centre also published 6 (six) books and one proceeding on the 3<sup>rd</sup> International Conference on Tropical Biology (ICTB). Four editions of BIOTROP Courier; the Centre's quarterly newsletters were published and disseminated to the external partners and Centre's beneficiaries. During the fiscal year in review, the Centre produced 3 (three) educational videos on intensive fruit tree gardening, potted fruit trees production and plant tissue culture were published in BIOTROP Youtube Channel with English subtitles. On 1 May 2020, the Centre launched its E-Publication on the Centre's official website ([biotrop.org/publication](http://biotrop.org/publication)). A total of 21 books are now available in digital version. The publication request is submitted through an online form available at [link.biotrop.org/publication/request](http://link.biotrop.org/publication/request). To disseminate information on the Centre's accomplishments, products, technologies, expertise, and publications, the Centre participated in at least 2 exhibitions during the fiscal year 2019/2020. To accommodate the increasing demands for the mobile web visitors, as well as to improve the website's Search Engine Optimization (SEO) friendliness, so that the website will have greater visibility to better disseminate the Center's program and new information, in April 2020, the Centre launched its new redesigned main website. The new website design incorporates a fresh look and new mobile friendly interface. To develop mutual cooperation between the Centre and mass media and to promote and disseminate the Centre's accomplishment, expertise and other useful information, on 4 December 2019 the Centre conducted a Media Exposure activities in its headquarter. The Centre uses three platforms of social media, i.e., Facebook, Instagram and Youtube Channel, as of June 2020 the Centre obtained a total of 3,230 Facebook followers, 2,143 Instagram followers, and 3,270 Youtube channel subscribers. The Centre provided printed version of 1,000 exemplars of BIOTROP Profile; 5,000 exemplars of brochures and leaflets of various laboratories and activities; 400 exemplars of Calendar; 200 exemplars of SEAMEOBIOTROP Annual Report; and at least 10 units of banners and posters.

During FY 2019/2020, the Centre facilitated 10 undergraduate students and 2 master students to conduct their research at the Centre's laboratories. The Centre also facilitated the internship and on-the-job training for 239 students and teachers. Due to Covid-19, the Centre limits the number of in-office activities, thus, for the fiscal year in review, the Centre only accommodated a total of 237 students to participated in internship program at the Centre.

For the period of July 2019 to June 2020, SEAMEO BIOTROP accommodated 76 visits consisted of 3,605 visitors came from various schools, universities, government agencies, private companies, communities as well as regional/international institutions, included the visit of delegates of Zanzibar, Sweden and Timor Leste.

School Fruit Garden for Education, Production, Genetic Conservation and Entrepreneurship in Agriculture Vocational Senior High Schools in Indonesia (SMARTS-BE) which was initiated since 2018, is still continued by publishing 57 manuals of intensive fruit plantings and 98 manuals of fruits-based products, conducted an FGD and Training course on the Use of Geospatial for Monitoring and Evaluation of Fruit Gardens, as well as a series of webinar titled SMARTS-BE TALKS SERIES. The results of SMARTS-BE Program were also presented in International Conference on Food and Economic Security and Environmental Sustainability, organized by Cagayan State University, Tuguegarao, the Philippines from 16 - 18 October, 2019.

## **SOLID RESOURCE BASE**

In the Fiscal Year under review, the Centre implemented staff development program to 153 staff members by sending them to attend training courses, conferences, seminars, workshops and symposia in Indonesia and abroad. The Centre also purchased laboratory equipment to support research works at some laboratories, conducted maintenance of various facilities and improved some facilities physical performance to make staff, researchers, and visitors feel more comfortable working or staying at the Centre.

For the fiscal year under review, the Centre received fund from the Government of Indonesia (GoI) as Operating Fund to cover staff salary and wages, operational expenses, and building and equipment maintenance. The Centre also received the annual Special Education and Development Fund (SEDF) from SEAMEO Secretariat which is intended for conducting regional and international trainings and seminars, research, Governing Board Meeting (GBM), and personnel exchange.

# REGIONAL LEADERSHIP





## REGIONAL LEADERSHIP

### SEAMEO BIOTROP Research and Development at a Glance 2019/2020

A total of 46 research projects has been conducted during the fiscal year 2019/2020. It consists of 26 completed research and 20 ongoing research projects which will be completed by the end of 2020.

As determined in the Centre's 10<sup>th</sup> Five-Year Development Plan (FYDP), all programs and activities during the fiscal year 2017 – 2022 shall refer to the Centre's three program thrusts, namely 1. Restoration of the degraded ecosystems; 2. Sustainable Management of Intensively Used Ecosystems/Landscapes; and 3. Conservation and Sustainable Use of Unique Ecosystems/Landscapes of High Biodiversity. To be in line with its program thrusts and consider the latest tropical biology issues, the Centre selected research proposals by the theme 'Food Sovereignty, Energy Resilience, Ecosystem Restoration, Climate Change and Disaster Mitigation, and Sustainable Use and Protection of Local Biodiversity in Southeast Asia'. The list of ongoing and completed research projects are presented in Appendix 1.

To cover four types of the research program, the Centre allocated a total amount of USD 112,918 of GoI source fund to support researches in 2019 and USD 118,612 in 2020, respectively. The types of the research program are as follows:

### Research Projects by Centre Researchers and Research Partner Institutions

This research fund was granted to National Partner Institutions for the fiscal year under review. The Centre funded 30 research projects, consisted of 26 completed research in 2019 and 4 ongoing research in 2020. The research projects are located in Indonesia, particularly in 12 provinces. Research that has been and will be carried out by SEAMEO BIOTROP, provides benefits to educators, academics, government, private agencies, policymakers, teachers, students, communities, farmers, and residents in the school environment to answer identified biological problems related to the three (3) program thrusts of SEAMEO BIOTROP.

Research on Dark Septate Endophytic Fungi (DSE) (Figure 1) conducted by Dr Surono and team have a positive contribution to the food sovereignty program of GoI. The results of the research will support the development of environmentally friendly agriculture through symbiotic interactions between plants and microorganisms, especially the endophytic fungi. Publications related to research and development of DSE fungi in the tropics, especially from swampland ecosystems in Indonesia are still limited. This research will provide new information regarding the diversity of DSE from swampland ecosystems with information on their roles as drivers of rice growth under acidic stress environmental conditions. The expected result of this research is the creation of a prototype of bio-fertilizer based on the DSE fungus, which functions as a growth booster for rice under acidic stress environment.

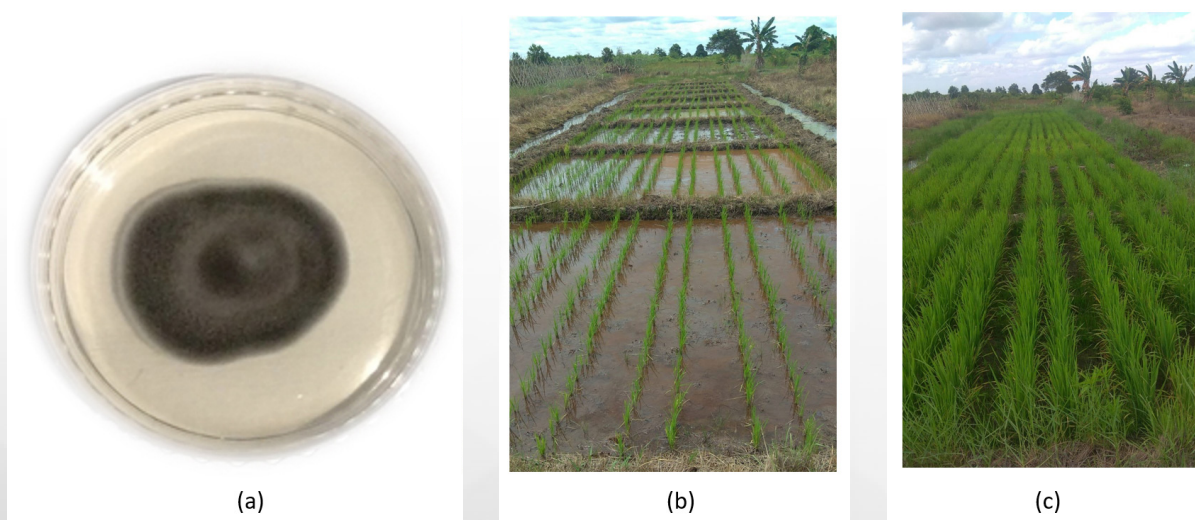


Figure 1 a). DSE fungal isolate KDS 1C produced in laboratory; b). Swamp rice plant (15 days old) pictured on 11 Agustus 2020, inoculated with the isolated in (a) grew in the acidic soil with pH 3.9 exposed by pyrite layer (FeS) in South Kalimantan, Indonesia; c). The same rice plant (47 days old) pictured on 12 September 2020

## National School Garden Action Research Grant

The Centre funded five (5) National School Garden Action Research for the fiscal year 2019/2020. The grantees were teachers from 5 schools, as follows:

- SD Negeri Bhayangkara Yogyakarta, (Elementary School),
- MA Assalam Sukabumi (Islamic Senior High School),
- SMPN 1 Subang (Junior High School),
- SMKN 1 Malang (Vocational Senior High School), and
- Sekolah Alam Insan Mulia - SAIM (Junior High School).

The research conducted by Ms Fera Maulidya Sukarno from SMPN1 Subang was unique because it was integrating School Garden Program and STEM Education, starting from designing hydroponic system, budget planning, seedling preparation, planting, caring for, harvesting, packaging, and selling products that would foster students' inquisition and entrepreneurship skills. Developing this kind of character is important for student to meet the global challenges for the 21<sup>st</sup> century.

## PhD Thesis Grants Program

During the period of June 2019 to July 2020, the Centre has funded 4 research proposals submitted by PhD students from Institut Pertanian Bogor (IPB-Bogor Agricultural University). SEAMEO BIOTROP provided research funding assistance for PhD students with an outstanding research proposals. Mr Dwi Sendi Priyono's research (Figure 2) on the characterization of Anoa genetic diversity in Sulawesi has been regarded as important milestones to conserve Anoa (dwarf buffalo endemic to Sulawesi). Anoa has been categorized as threatened species with extinction status, according to the International Union for Conservation of Nature (IUCN). This study aims to characterize the complete mitochondrial genome of mountain Anoa (*Bubalus quarlesi*) and compare it with lowland Anoa (*Bubalus depressicornis*), to confirm the phylogenetic position, investigate the genetic diversity of Anoa, and trace the biogeographic history of Anoa.



Figure 2 Mountain Anoa (dwarf buffalo) endemic in Sulawesi

## Self-Management Fund Program

The Self-management fund program is an internal program of SEAMEO BIOTROP to improve its human resources by supporting junior researchers/research assistants to pursue their post-graduate studies. This program was started in 2016. Funding has been allocated, especially to support their research projects. A total of seven (7) junior researchers/research assistants have been funded for the fiscal year 2019/2020. Mr Harry Imantho, MSc, a junior researcher at Remote Sensing Laboratory pursuing his PhD degree, creates a spatial-temporal model application of soil moisture content dynamics and soil workability that could be used to monitor the status of soil water content in large-scale sugarcane plantations (Figure 3). The spatial-temporal prospect of soil water content and soil workability produced by the model can be used as input in the agricultural input planning, such as the selection of agricultural machinery, agricultural machinery operation scheduling, land processing route planning, fertilizer application planning and irrigation management in sugar cane plantations.



Figure 3 Precision agriculture research measurement activities in Karawang Regency, West Java, Indonesia: a. Soil metric suction measurement; b. Soil penetration measurement; c. Paddy growth monitoring using unmanned aerial vehicle (i.e., UAV drone)

Note: To improve the accuracy of measurement results, the paddy field was designed according to the pixel direction and resolution (i.e., 10 x 10 m) of Sentinel 2 satellite.



## Training and Other Learning Events

For the fiscal year in review, SEAMEO BIOTROP has implemented 33 training courses and other learning events related to tropical biology (Appendix 1). The activities consisted of 5 training of trainers, 1 national conference, 3 online quarterly public seminars, 1 workshop, 5 online sharing sessions, 1 online talkshow, 2 online talk series, 3 online trainings, 4 online seminars, 1 FGD, 4 international conferences, 3 in-country trainings. A total of 3,202 individuals from government institutions, schools, universities, research centres and private sectors, benefited from these activities.

The Centre's activities during the period in review were offered either solely by the Centre or in partnership with national, regional and international development and academic institutions involved in tropical biology. Highlights of the regional and national learning events are as follows:

### Regional, National and In-country Training Courses, Seminars and Workshops

#### In-country Training on School Garden for Improving Students' Literacy, Nutrition and Entrepreneurship in Cambodia (10 – 13 October 2019)



Thirty Cambodian school teachers completed a training course on school garden for improving students' literacy, nutrition, and entrepreneurship on 10-13 October 2019 at the Royal University of Phnom Penh (RUPP), Phnom Penh, Cambodia. This activity was conducted by SEAMEO BIOTROP in collaboration with the Ministry of Education, Youth, and Sport of Cambodia (MoEYS) and RUPP.

In general, the 4-day training course was designed for the school teachers to acquire basic knowledge and skills on school garden application regarding literacy, nutrition and entrepreneurship to benefit their students, families and communities.

The training course presented five experts, namely Dr Long Solida and Dr Ith Saveng from RUPP, Mr Voun Vannarath from the Ministry of Agriculture, Forestry and Fisheries of Cambodia, Mr Khean Puthy from Preah Novadom Sihamoni General Knowledge and Technical High School, and Ms An Mouy Ngech from Kampong Prasat Village.

All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 4 2019.

## Training of Trainers on Mapping and Natural Disaster Mitigation through Spatial Planning on Coastal Areas (29 July – 2 August 2019)



SEAMEO BIOTROP in collaboration with Tadulako University conducted the training course on mapping and disaster mitigation in coastal areas on 29 July – 2 August 2019 at Tadulako University in Palu, Indonesia. This training aimed to improve the ability of training participants in understanding and knowing kinds of disasters in coastal areas and their mitigation, the characteristics of disaster-prone areas and exposed areas, the use of Geographic Information System (GIS) and Remote Sensing (RS) to identify mangrove ecosystems for mitigating coastal disasters, and the use of drones for taking aerial photos to map the ecosystem distribution in coastal areas.

This training course also focused on the development and preparation of teaching materials according to the rules of the revised Curriculum 2017 containing Strengthening of Character Education (PPK), Literacy, 4C (Creative, Critical thinking, Communicative and Collaborative), and Higher Order Thinking Skills (HOTS) which apply mapping techniques in disaster mitigation activities in coastal areas. Thirty-two participants consisted of school teachers and representatives from government institutions located in Central Sulawesi Province attended this activity.

To achieve its objectives, this training course featured eight experts, namely Dr Aslan, Dr Zulhamsyah Imran, Mr Armaiki Yusmur, MSi and Mr Slamet Widodo, SSi, from BIOTROP; Dr Ir Muhd Nur Sangadji, DEA and Mr Nur Salam, MSi, from Tadulako University; Dr Ir Fatma Djuwita, MSi, from Indonesia's Ministry of Environment and Forestry; and Mr Hariady Indra Mantong, MSc, from Human Settlements and Water Resources Government Office of Central Sulawesi Province.

The materials were delivered in lectures and practicum sessions, covering: 1) Coastal areas and potential disasters in Indonesia; 2) Legal basis for environmental studies and spatial planning; 3) Disaster risk in the preparation of Zoning Plans for Coastal Areas and Small Islands (RZWP3K); 4) Disaster risk in the Strategic Environmental Assessment (KLHS) of Spatial Plans (RTRW); 5) Disaster risk management in spatial planning; 6) Utilization of Remote Sensing (RS) and Geographic Information System (GIS) for disaster mapping and spatial planning in coastal areas; 7) Unmanned Aerial Vehicle (UAV) utilization for rapid disaster mapping; 8) Data acquisition techniques for disaster; 9) UAV flight operations for disaster mapping; 10) Mapping of coastal disaster areas with ArcGIS/QGIS; 11) RTRW evaluation with vulnerability maps using ArcGIS; and 12) Emergency Assistance for Rehabilitation and Reconstruction (EARR) project for disaster mapping.

All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 3 2019.

## Training of Trainers on Applications of Acoustic Technology for Studying Underwater Objects as well as for Inventorying and Conserving Marine Biota (5 – 9 August 2019)

SEAMEO BIOTROP conducted a training course on the Applications of Acoustic Technology for Underwater Object Studies, Marine Biota Inventory and Conservation for School Teachers on 5 - 9 August 2019 in its headquarters in Bogor. The training course was emphasized on the use and operation of marine acoustics instruments for the collection and analyses of fish, zooplankton, coral reef, seagrass, seabed data, suspended sediment, ocean current and to some extent for mapping archaeological resources.

The training course featured three experts, namely Prof Henry M. Manik, PhD, from Institut Pertanian Bogor (IPB-Bogor Agricultural University), Mr Asep Priatna, MSi, from the Agency for Marine and Fisheries Research and Human Resources (BRSDMKP) and Dr Susilohadi from the Marine Geological Research and Development Center (P3GL), who were assisted by two instructors, namely La Elson, MSi and Ms Andi Yaodi Nurani Yamin, SIK, from Institut Pertanian Bogor (IPB-Bogor Agricultural University).



The participants gained insights on eight topics during the classroom session, covering: 1. Introduction to Marine Acoustic Technology and Its Applications; 2. Application of Acoustic Technology for Fisheries; 3. Data Processing and Analysis; 4. Application of Acoustic Technology for Marine Zooplankton; 5. Application of Acoustic Technology

for Marine BioSonar; 6. Application of Acoustics for Mapping the Ocean; 7. Application of Marine Acoustics for Coral Reef Mapping; and 8. Application of Marine Acoustics for Seagrass Mapping. The ocean field session was also held in Tidung Islands, North Jakarta.

A total of 26 representatives from various educational institutions in Indonesia took part in this activity as participants. All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 3 2019.

### Training of Trainers on Identification of Mycotoxigenic Fungi (3 – 6 September 2020)

SEAMEO BIOTROP held a training activity on the identification of mycotoxin-producing fungi on 3 - 6 September 2019 at its headquarter. This training was intended to deliver knowledge and skills in identifying the characteristics of mycotoxin-producing fungi in food both morphologically and molecularly using the BGYF (Blue Green Yellow Fluorescence) and Thin Layer Chromatography methods. Mycotoxin itself is a toxic secondary metabolite produced by certain microfungi and is capable of causing diseases and deaths in both humans and animals.

The training course covered thirteen topics which were divided into classroom and practicum sessions: 1. morphological characters of Ascomycota; 2. diversity of mycotoxin-producing fungi in stored foodstuffs in Indonesia; 3. new taxonomic schemes of mycotoxigenic fungi; 4. taxonomy and identification of *Aspergillus* and *Fusarium*; 5. molecular approach in fungus systematics; 6. isolation of mycotoxin-producing fungi in food; 7. macro- and micromorphological observations of *Aspergillus* and *Fusarium*; 8. mycotoxins in fermented food; 9. mycotoxin analysis in fungus isolates; 10. sequence quality, sequence editing, and alignment; 11. phylogenetic analysis: multigene; 12. phylogenetic tree interpretation; and 13. identification of mycotoxin-producing fungi molecularly.



All materials were delivered by four experts as the resource persons: 1. Prof Robert A. Samson from Westerdijk Fungal Biodiversity Institute, Utrecht, the Netherlands; 2. Prof Okky Setyawati Dharmaputra from SEAMEO BIOTROP; 3. Dr Gayuh Rahayu from Institut Pertanian Bogor (IPB-Bogor Agricultural University); and 4. Dr Nani Maryani from Sultan Ageng Tirtayasa University. In the practicum sessions, they were assisted by five research assistants from the Centre.

A total of 27 participants from various universities, research institutions, government institutions and companies joined this activity.

All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 3 2019.

### The 3<sup>rd</sup> Quarterly Public Seminar Series on “Mycotoxins in Fermented Food” (5 September 2019)



SEAMEO BIOTROP featured Prof Robert A. Samson from Westerdijk Fungal Biodiversity Institute, Utrecht, the Netherlands, as a speaker in its third Quarterly Public Seminar 2019. He lectured on ‘Mycotoxin in Fermented Food’ on 5 September 2019 at the Centre’s headquarter in Bogor. The seminar was attended by 52 participants from various research and government institutions, universities and companies.

Prof Robert began his presentation with an introduction to the mycotoxins, which are toxic compounds produced by many fungi species and have harmful effects when being consumed. Five important mycotoxins include aflatoxins, trichothecenes and other *Fusarium* toxins, ochratoxins, patulin, and sterigmatocystin. These mycotoxins are also known to be produced by several fungi used in the food fermentation process.

As a conclusion, Prof Robert conveyed three main points of his seminar: 1. many types of food fermentation exist, but some of them are still poorly studied; 2. starter cultures may produce mycotoxins and it is very important to analyze if the cultures are safe during fermentation; and 3. it is important to evaluate the new taxonomies and the concept of domestication for food fermenting fungi.

All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 3 2019.

## Workshop on Strategy for Strengthening Fisheries Resources and Coastal Area (10 December 2019)



Thirty experts from various institutions joined a workshop on strategy for strengthening the water management and coastal ecosystems held by SEAMEO BIOTROP on 10 December 2019 in its Campus in Bogor. This activity aimed to formulate a revitalization and strengthening program for management of freshwater and ecosystems in coastal areas and small islands.

Six speakers were presented at the event, namely Onrizal, PhD (Universitas Sumatera Utara), Imran Amin (The Nature Conservancy Indonesia), Dr Majariana Krisanti (Institut Pertanian Bogor/IPB-Bogor Agricultural University), Dr Zulhamsyah Imran (SEAMEO BIOTROP and Institut Pertanian Bogor/IPB-Bogor Agricultural University), Gito Prawoko (PT Bukit Asam, Tbk.) and Tiyas Nurcahyani, MSi (the Ministry of Energy and Mineral Resources of the Republic of Indonesia). They presented six topics, consisted of: 1. Inventory and Rehabilitation of Mangrove Ecosystems; 2. Management of Biodiversity in Coastal and Marine Areas; 3. Management of Aquatic Resources; 4. Water Management Ideas: Floating Garden; and 5. Ecosystem-Based Water Management: Utilization of Ex-Mining Ponds, respectively.

Eleven strategies were produced during the workshop, namely 1. establishing a participatory management system (social-ecological system) with indicators of each element that can be evaluated; 2. establishing proper mining waste management to conform to predetermined quality standards; 3. implementing sustainable use of the environment; 4. increasing the viability of coastal and aquatic ecosystems; 5. equating economic activities among stakeholders; 6. integrating waste management systems; 7. reducing the level of threats in waters and coastal ecosystems; 8. planning on holistic post-mining scheme since the beginning; 9. conducting social and institutional studies; 10. conducting aquatic biodiversity studies; and 11. using environmentally friendly fishing gear.

All information regarding this activity was published in BIOTROP Courier Vol. XXI Quarter 4 2019.

## Talkshow on Modern Farming (26 – 27 February 2020)



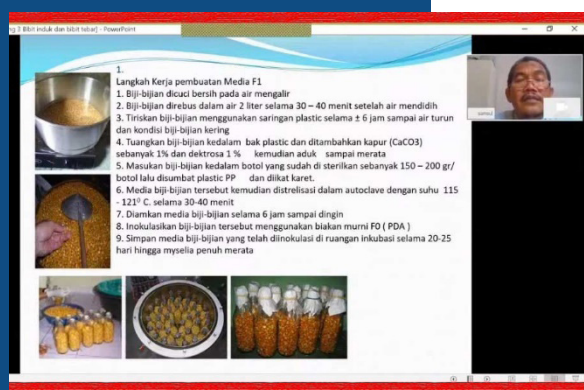
SEAMEO BIOTROP celebrated its 52<sup>nd</sup> anniversary on 26 - 27 February 2020 by bringing up the theme “Learning and Sharing Innovations to Community”, which emphasizes the Centre’s focus to disseminate various SEAMEO BIOTROP excellent innovations to community as well as to build and strengthen the support of stakeholders at national and regional levels in promoting the real values of tropical biology in Southeast Asia.

The two-day celebration was enlivened by the Talk shows and Exhibition on Tropical Biology Education and Community Empowerment. Talk shows with the themes on hydroponics, aquaponics, edible mushroom cultivation, plant tissue culture, potted fruit trees and essential oil featured the Centre’s researchers and staff as resource persons, namely Ms Riana Hartati, SSi, Ms Shella Marlinda, MSi, Mr Samsul Ahmad Yani, SSi, Dr Erina Sulistiani, Dr Supriyanto and Mr Jonner Situmorang, MSi.

A total of 136 participants from various Indonesian research institutions, private companies, schools and universities joined this activity.

All information regarding this activity was published in BIOTROP Courier Vol. XXII Quarter 1 2020.

## Online Training on Urban Agriculture Implementation to Support Family Food Security Batch 1 and Batch 2 (May – June 2020 and August - October 2020)



In the midst of Covid-19 pandemic, SEAMEO BIOTROP keeps contributing to the improvement of community skills. One of them was by holding online training series on Application of Urban Agriculture in Support of Family Food Security on 11 May – 12 June 2020 and 11 – 27 August 2020 through webex online platform. These activities were aimed to: 1. increase participants' understanding on the basic concepts of urban agriculture; 2. share knowledge about several urban agricultural technologies that can be implemented appropriately according to existing conditions; 3. share knowledge related to agricultural technology that can be applied to support food supply for families; and 4. provide an opportunity for participants to practice and develop innovative projects related to urban agriculture.

The series consisted of four main themes, in which each theme had four sessions with various topics. The topic covered hydroponics, aquaculture, tissue culture and mushroom cultivation. To complete the training series, the participants have to accomplish a final task given by the coordinator.

A total of 200 participants joined the series of training courses. A livestreaming media was also provided via the Centre's youtube channel (@seameobiotrop) for those who were not able to register to the courses due to limited participant capacity.

All information regarding this activity was published in BIOTROP Courier Vol. XXII Quarter 2 and Quarter 3 2020.

### Formal Recognition (Accreditation) ISO / IEC 17025:2017 implementation at Services Laboratory BIOTROP

ISO / IEC 17025:2017 (General requirements for the competence of testing and calibration laboratories) enables laboratories to demonstrate that they operate competently and generate valid results, thereby promoting confidence in their work both nationally and around the world. It also helps facilitate cooperation between laboratories and other bodies by generating wider acceptance of results between countries. Test reports and certificates can be accepted from one country to another without the need for further testing, which, in turn, improves international trade.

Services Laboratory - SEAMEO BIOTROP (SL BIOTROP) is one part of the organization which has the task of SEAMEO BIOTROP as testing laboratory since 2004. In order to comply with international standards, SL SEAMEO BIOTROP has implemented a Quality System of Laboratory Management in accordance with ISO / IEC 17025: 2017 and accredited by KAN (National Accreditation Committee) with Accreditation Number: LP-221-IDN. In March 2017 SL SEAMEO BIOTROP has obtained formal recognition as Environmental Laboratory from the Ministry of Environment of the Republic of Indonesia, based on the implementation of the regulation of the Minister of Environment and Forestry of the Republic of Indonesia, No. 06 year 2009.

The main tasks and functions of Services Laboratory (based on the Decree of BIOTROP's Director No. 256.1/KP.01.01/IV/2020) are to support the research activities of SEAMEO BIOTROP and SEAMEO BIOTROP Partners, and also to improve the quality of Human Resources in the field of tropical biology. In order to ensure its technical competence, SL implemented and received formal recognition (accreditation) ISO 17025 from the National Accreditation Committee.

## SL SEAMEO BIOTROP consists of three testing laboratories:

Water and Air Laboratory which focuses on Environmental Quality Monitoring included fresh and waste water, emission and ambient air.

Soil and Plant Laboratory for testing soil fertility and plant tissue analyses.

Food and Feed Laboratory performs analyses on nutrition and contaminant in food and feed.

There are more than 120 parameters that have obtained ISO/IEC 17025:2017 accreditation for fresh and waste water, emission and ambient air, soil and plant, also food and feed.





# REGIONAL VISIBILITY



## REGIONAL VISIBILITY

### Partnership and Linkages

During the Fiscal Year 2019/2020, a total of 45 MoUs were signed, consisted of 1 completed MoU and 44 on-going MoUs. The 44 on-going MoUs are consisted of 6 MoUs with universities, 9 MoUs with non-profit organizations, 6 MoUs with private companies and 23 MoUs between the Centre and Vocational Schools on the Agriculture Vocational School for Vegetable and Fruit Tree Orchard (SMARTS-BE) Program.

During the 54<sup>th</sup> SEAMEO BIOTROP Anniversary Celebration, the Centre inked 6 MoUs with partner institutions. One of which is the agreement between SEAMEO BIOTROP and the Center for Tropical Horticulture Studies (PKHT) of Institut Pertanian Bogor (IPB-Bogor Agricultural University) on the establishment of Agro-eco-edu-tourism program, effective for 3 years. The detail concept and preparation of this program was tabled during the Centre's 58<sup>th</sup> Virtual Governing Board Meeting on 6 - 7 October 2020.

An international collaboration was also established and formalized through the MoU and MoA between the Centre and MSC. CO., Ltd, a manufacture company of food additives, such as jelly and carrageenan from South Korea. Both parties agreed to cooperate in the provision of Cottonii seaweed plantlets derived from tissue culture. SEAMEO BIOTROP has an expert in the field of tissue culture, namely Dr Erina Sulistiani. She studies how to produce seaweed seedlings with fast growth and more resistant to diseases. SEAMEO BIOTROP will send the seaweed seedlings resulting from tissue culture to South Korea to be cultivated there.

The MoUs signed during the fiscal year under review, were focused on the quality improvement of human resources by conducting internship program (for teachers, students and agency's employees), including SMARTS-BE assistance. Requests for the Provision of Experts were around 10% of the total Cooperation received by SEAMEO BIOTROP with the most requests were from private companies. Application for Laboratory Services was as much as 13% and covered the application for assistance in the Tissue Culture Laboratory.

Detail of the MoUs is presented in Appendix 3.

### Publication and Information Exchange

The Centre set target on publication program based on annual Gol supporting fund and the Centre's Five-Year Development Plan (FYDP). The complete titles and authors of the publications are presented in Appendix 5. For the period of July 2019 to June 2020, the Centre's accomplishments on publication are as follows:

#### BIOTROPIA Journal

BIOTROPIA Journal is a scientific publication of SEAMEO BIOTROP, publishes articles in the broad areas of tropical ecosystems and environmental impacts, biodiversity conservation and sustainable development and biotechnology.

Annual target	To be published 3 issues per year (quarterly), containing 10 articles per issue in printed and online versions.
Objective	To provide scientific knowledge in the broad areas of tropical biology. To support documentations of significant research on tropical biology.
Accomplishment in FY 2019/2020	3 issues were published, i.e.: Vol. 26 No. 3; Vol. 27 No.1; and Vol. 27 No. 2 in printed and online versions. The online In-Press versions of Vol. 27 No. 3, has also been published. All online versions are available at <a href="https://journal.biotrop.org/index.php/biotropia/issue/archive">https://journal.biotrop.org/index.php/biotropia/issue/archive</a> .
To be accomplished in FY 2020/2021	To publish printed version of Vol. 27 No. 3 and printed and online version of Vol. 28 No. 1 and Vol. 28 No. 2 and online version of Vol. 28 No. 3.



Figure 4 BIOTROPIA Journal Vol. 26 No. 3, Vol. 27 No. 1, and Vol. 27 No. 2

## Special Publications

The Centre's Special Publication are books, proceedings, modules, guidelines and other learning materials published by the Centre.

Annual target	At least 2 titles per year.
Objective	To provide learning materials in the field of tropical biology.
Accomplishment in FY 2019/2020	6 books and one proceeding on the 3 <sup>rd</sup> International Conference on Tropical Biology (ICTB) were published in printed and digital versions which can be accessed through the Centre's official website.
To be accomplished in FY 2020/2021	To publish a book on Survey Guidelines on Invasive Alien Species, two modules on Biotechnology and School Garden in the period of July to December 2020, and to publish modules on the Centre's laboratories practices.



Figure 5 Special Publications: Book of Seaweed *Cottonii* Tissue Culture, Proceedings of the 3<sup>rd</sup> ICTB and Module on Integrated Pest Storage Management

## BIOTROP Courier

BIOTROP Courier is the Centre's newsletter published quarterly. It contains activity reports, updated information, announcement as well as book review.

Annual target	To publish 4 issues per year, 16 pages with 10 - 12 news in average per issue.
Objective	To provide information on activities that have been conducted by the Centre, information of upcoming activities, updated information on Centre's staff, program and activities, as well as other useful information in tropical biology areas.
Accomplishment in FY 2019/2020	4 issues were published, i.e.: BIOTROP Courier Vol. 21 No. 3; Vol. 21 No. 4; Vol. 22 No. 1; and Vol. 22 No. 2 in printed and online versions. The online versions are available in <a href="https://biotrop.org/publication/courier">https://biotrop.org/publication/courier</a>
To be accomplished in FY 2020/2021	To publish 4 issues, namely: BIOTROP Courier Vol. 22 No. 3; Vol. 22 No. 4; Vol. 23 No. 1; and Vol. 23 No. 2 in printed and online versions.



Figure 6 BIOTROP Courier Vol. 21 No.3, Vol. 21 No. 4, Vol. 22 No. 1, and Vol. 22 No. 2

## Educational Videos

The educational videos were produced in collaboration between the Centre and selected production house (PH) in accordance with the GoI regulation on Product and Services Procurements. The Centre through the Knowledge Management Department, developed the video contents, while the PH transformed it into audio visual format.

Annual target	At least one educational video on the area of the Centre's expertise is produced and uploaded in BIOTROP Youtube Channel.
Objective	To disseminate information, transfer the knowledge and provide learning resources in audiovisual materials to support workshop and training activities, that can be accessed by online platforms.
Accomplishment in FY 2019/2020	3 Educational videos on intensive fruit tree gardening, potted fruit trees production and plant tissue culture were published in BIOTROP Youtube Channel with English subtitles, as well as in educational TV channel of the Ministry of Education and Culture of the Republic of Indonesia (Rumah Belajar). The links are: <a href="https://www.youtube.com/watch?v=N4MP8_Eb-So">https://www.youtube.com/watch?v=N4MP8_Eb-So</a> , <a href="https://www.youtube.com/watch?v=bBPJc05Ky-U">https://www.youtube.com/watch?v=bBPJc05Ky-U</a> , and <a href="https://www.youtube.com/watch?v=DesjBSpchzk">https://www.youtube.com/watch?v=DesjBSpchzk</a> 27 videos from the recorded live online sessions on training conducted by the Centre were uploaded in the Centre's Youtube channel to accommodate the participants who missed the live session. The recordings also serve as documentation for the online training sessions, to be used as future references.
To be accomplished in FY 2020/2021	To publish at least 3 educational videos on Hydroponic, Fresh Water Lobster Cultivation, and Stingless Bee Cultivation and Trigona Honey production, in BIOTROP Youtube channel with English subtitle.

## E-Publication

The Centre has over 13,000 books in the Centre's library collection. The E-Publication is the new initiative of the Centre to provide digital collections of the Centre's Library.

Objective	<ul style="list-style-type: none"> <li>• To provide online information on the Centre's library collections to its stakeholder and beneficiaries</li> <li>• To provide online publication request as part of library services</li> <li>• To develop online database system of library collections and publication inventory</li> </ul>
Accomplishment in FY 2019/2020	On 1 May 2020, the Centre launched its E-Publication on the Centre's official website (biotrop.org/publication). A total of 21 books are now available in digital version. The publication request is submitted through an online form available at <a href="http://link.biotrop.org/publication">link.biotrop.org/publication</a> request.
To be accomplished in FY 2020/2021	To continue uploading digital version of the Centre's publication in the Centre's E-publication.

## Exhibitions

Annual target	The Centre participated in at least 2 exhibitions.
Objective	To disseminate information on the Centre's accomplishments, products, technologies, expertise, and publications.
Accomplishment in FY 2019/2020	The Centre participated in one exhibition held in Palembang, South Sumatra on 10 - 12 January 2020 on Indonesian superior fruits and vegetables (Pameran Buah dan Sayur Unggulan). The Centre also organized and participated in two exhibitions on tropical biology products and technologies, held during the visit of the Minister of Research and Technology of the Republic of Indonesia on 23 January 2020, and on the celebration of the Centre's 52 <sup>nd</sup> Anniversary on 26 - 27 February 2020.
To be accomplished in FY 2020/2021	To be participated in at least 1 exhibition on the Centre's research results. At least 1 exhibition to be displayed on the Centre's research results.



## Website

The shift in user's technology in accessing online information from desktop to mobile have been happening in the past years. Based on the data collected through a website analytics tool, we can see the increase in the percentage of mobile device access to SEAMEO BIOTROP's main website every fiscal year (Figure 7).

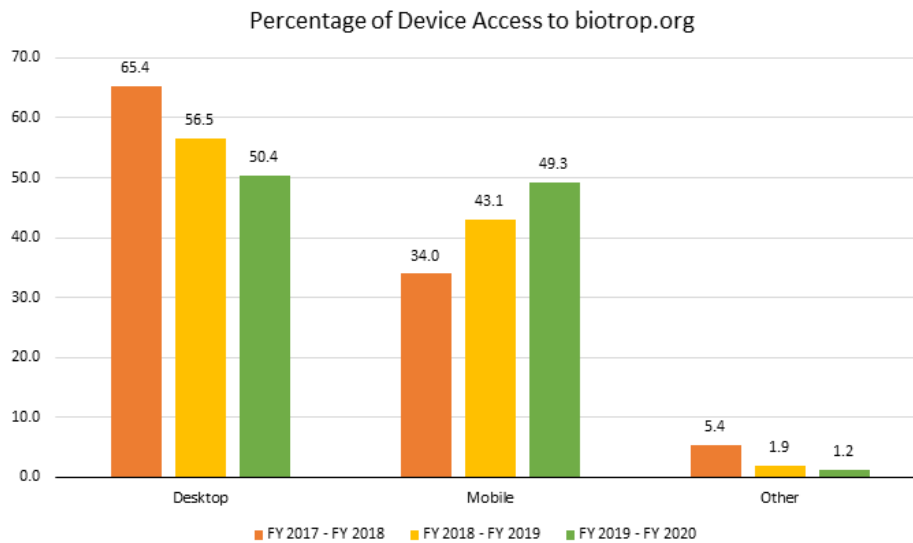


Figure 7 Percentages of mobile device access to SEAMEO BIOTROP's main website

Annual target	The Centre updates its official website once a week or about 48 times in a year.
Objective	To disseminate information on the Centre's accomplishments, products, technologies, expertise and publications.
Accomplishment in FY 2019/2020	<p>In April 2020, the Centre launched its new redesigned main website. The new website design incorporates a fresh look and new mobile friendly interface. The redesign aims to accommodate the increasing demands for the mobile web visitors, as well as to improve the website's Search Engine Optimization (SEO) friendliness, so that the website will have greater visibility to better disseminate the Center's program and new information.</p> <p>During the fiscal year in review, the Centre uploaded a total of 150 articles consisted of 38 news articles, 22 external events from other SEAMEO Centres, 19 MoUs, 20 research reports, 36 photos on the Centre's activities, and 15 information updates in the Centre's publications section.</p>
To be accomplished in FY 2020/2021	<p>To maintain and update the content of the Centre's website in particular the updated issues of BIOTROPIA Journal, BIOTROP Courier Newsletter and books.</p> <p>To promote the Centre's official website in the Centre's social media to increase the number of website visitors.</p>



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REDESIGNED





## Media Exposure

Annual target	At least one activity in a year is published in mass printed or electronic media.
Objective	To develop mutual cooperation between the Centre and mass media and to promote and disseminate the Centre's accomplishment, expertise and other useful information to the public through national and local mass media.
Accomplishment in FY 2019/2020	On 4 December 2019 the Centre conducted a Media Exposure activities in its headquarter. The event was participated by 139 journalists from 41 national mass media. The Centre presented its profile, achievements by the Centre's Tissue Culture research and laboratory, implementation of SMARTS-BE Program, School Garden Project, and Edible Mushroom Cultivation.
To be accomplished in FY 2020/2021	To organize a Media Exposure activities to promote the Centre's new program of Agro-eco-edu-tourism and the 4 <sup>th</sup> International Conference on Tropical Biology.



## Social Media Management

The Centre uses three platforms of social medial, i.e., Facebook, Instagram and Youtube Channel.

Annual target	Daily updates on the Centre's Facebook and Instagram official accounts. Three (3) Educational videos were uploaded to the centre's Youtube account.
Objective	To provide the latest, day to day beneficial contents and information regarding tropical biology in general and the Centre's program thrust specifically, including: the Centre's activities, research results, promotional materials, and other supplementary contents from external sources.
Accomplishment in FY 2019/2020	An increase in the number of followers, as of June 2020 a total of 3,230 Facebook followers, 2,143 Instagram followers, and 3,270 Youtube channel subscribers. Daily updates on the Centre's official Facebook and Instagram accounts. To support the online training conducted by the Centre, videos of the live online sessions were recorded and uploaded to the Centre's Youtube channel to accommodate the participants who missed the live session. The recordings also serve as documentation for the online training sessions, to be used as future references. In total, during the fiscal year in review, 27 videos were uploaded to the Centre's Youtube channel.
To be accomplished in FY 2020/2021	An increase of 500 Facebook followers 500 Instagram followers, and 500 Youtube subscribers. Daily updates of the Centre's social media platform. 3 additional educational videos uploaded to the Centre's Youtube platform.

## Promotional Materials

Annual target	To provide printed version of 1,000 exemplars of BIOTROP Profile; 5,000 exemplars of brochures and leaflets of various laboratories and activities; 400 exemplars of Calendar; 200 exemplars of SEAMEO BIOTROP Annual Report; at least 10 units of banners and posters.
Objective	To disseminate information on the Centre's accomplishments, products, technologies, expertise, and publications.
Accomplishment in FY 2019/2020	Printed and disseminated promotional materials as follows: printed 6,000 and disseminated 4,915 (82%) of brochures of hydroponic, aquatic, visit, tissue culture, edible mushroom cultivation, and BIOTROPIA. printed 2,000 and disseminated 1,350 of BIOTROP Profile. printed and disseminated 400 exemplars of Calendar 2020. printed 500 and disseminated 150 exemplars of SEAMEO BIOTROP Annual Report 2018/2019 designed and printed 6 banners of tissue culture, aquatic, entomology laboratories, Covid-19 prevention, and BIOTROPIA.
To be accomplished in FY 2020/2021	To design and print brochure and banners of the Agro-eco-edu-tourism program, 3,000 brochures of various Centre's laboratories and program, 1,000 BIOTROP Profile, 200 SEAMEO BIOTROP Annual Report FY 2019/2020, 400 Calendar of 2021, at least 5 posters of the Centre's research.



## Students Internship/On the Job Trainings

In supporting the SDG no. 4 on quality education, the Centre provides an opportunity for students to enhance their knowledge and skills by conducting research and joint internship and on-the-job training program at SEAMEO BIOTROP. During FY 2019/2020, the Centre facilitated 12 students consisted of 10 undergraduate students and 2 master students from the Faculty of Agriculture of Universitas Ibn Khaldun, Faculty of Forestry and Faculty of Agriculture of Institut Pertanian Bogor (IPB-Bogor Agricultural University), and Faculty of Agriculture of Universitas Djuanda Bogor, to conduct their research at the Centre's laboratories.

During FY 2019/2020, the Centre also facilitated the internship and on-the-job training for 239 students and teachers from 54 institutions and 2 entrepreneurs (See Appendix 4). During the fiscal year in review, the number of internship participants decreased by 21% compared to FY 2018/2019 due to the Covid-19 pandemic which limits the number of in-office activities. Details of students and teachers participated in the programs are as follows: 9 junior high school students, 6 senior high school students, 116 vocational high school students, 13 vocational school/diploma students and teachers, and 93 university students. This internships and on-the-job trainings are on the following areas: biotechnology; aquaculture; silviculture; essential oil; entomology; GIS and Remote Sensing; pest and disease management; waste management; analyses of water, food and feed, and soil and plant; hydroponics; mushroom cultivation; phytopathology; biosystem and landscape management; invasive alien species and weed management; and office administration; and finance management.



## Visitors

During the fiscal year July 2019-June 2020, SEAMEO BIOTROP accommodated 76 visits consisted of 3,605 visitors came from various schools, universities, government agencies, private companies, communities as well as regional/international institutions.

The Centre established mutual relationships with most of these institutions. Foreign delegates visited SEAMEO BIOTROP during period under review were:

1. On 7 August 2019, a delegate from Zanzibar Ministry of Agriculture Natural Resources, Livestock and Fishing of Zanzibar and Institute of Agriculture Research of Zanzibar) escorted by an official from the Ministry of Foreign Affairs of the Republic of Indonesia had visited SEAMEO BIOTROP. The delegate had a discussion with the Centre's Director dan Deputy Director for Administration on exploring the possibility to conduct research collaboration with the Centre.
2. On 15 October 2019, the representative of Regional Research Cooperation in Asia of the Embassy of Sweden visited SEAMEO BIOTROP to discuss about a program of Indonesian student internship in Japan, especially in the field of agriculture, agricultural technology, fisheries and animal husbandry.
3. On 13 November 2019, a delegate from the Education Attaché of Timor Leste Embassy in Jakarta visited the Centre. On 4 December 2019, eight representatives from The Korea International Cooperation Agency (KOICA) Indonesia visited the Centre to initiate collaboration. They were interested in applied technologies and seaweed tissue culture techniques.

Within the year of 2020 the number of visitors decreased due to the Covid-19 pandemic. As the follow up action of the letter from the Minister of Education and Culture of the Republic of Indonesia (MoEC) No. 35492/A.A5/HK/2020 on the prevention of the spread of Covid-19 in MoEC, the Centre had to call off all activities which included inviting participants from overseas including trainings and visitors receptions. The Centre also limited the visitors to a maximum of 10 people per visit. All activities shall follow the protocol of prevention of the spread of Covid-19. Thus, since April 2020 to date, the Centre did not receive a f large numbers of visitor.



## Special program

### School Fruit Garden for Education, Production, Genetic Conservation and Entrepreneurship in Agriculture Vocational Senior High Schools in Indonesia (SMARTS-BE)

As part of the SMARTS-BE program, each school was obligated to write a manual to plant a specific species of fruit trees that thrive in their field. These manuals were then compiled and documented by SEAMEO BIOTROP's SMARTS-BE team. There are 57 manuals of intensive fruit plantings and 98 manuals of fruits-based products. Those manuals will be printed as part of SEAMEO BIOTROP Special Publications.

As part of the SMARTS-BE program, SEAMEO BIOTROP through its tissue culture laboratory has studied the mass propagation of wild edible fruits from Indonesian forests, namely matoa (*Pometia pinnata*) and tropical chestnut (*Castanopsis argentea*). These species have been successfully propagated using tissue culture technique. The seedlings produced through tissue culture would be distributed to the schools

During the year of 2019, the SMARTS-BE program has been continued to optimize cultivation of fruit garden, based on genetic selection, manipulation of environment inputs, and integrated pest management. To strengthen the SMARTS-BE network, continuous consultation using social media was done including sharing the technology, experiences; improved-genetic resources exchanges, teaching factory development, field visit and FGD. Focus Group Discussion (FGD) was made available on the topic of Human Resources Development for Vocational School in Industrial Era 4.0, participated by 70 teachers coming from 36 Schools. Resource persons were invited from SEAMEO BIOTROP and Institut Pertanian Bogor (IPB-Bogor Agricultural University). Training course on the Use of Geospatial for Monitoring and Evaluation of Fruit Gardens was participated by 30 teachers coming from 28 vocational schools. Two (2) tutorial videos on Intensive fruit trees establishment and potted culture system of fruit trees were produced and shared to schools and publics. The tutorial videos are available in YouTube <https://youtu.be/bBPJcO5Ky-U> and [https://youtu.be/N4MP8\\_Eb-So](https://youtu.be/N4MP8_Eb-So).

The results of SMARTS-BE Program were also presented in International Conference on Food and Economic Security and Environmental Sustainability, organized by Cagayan State University, Tuguegarao, 16-18 October, 2019, titled Knowledge and Technology Transfer from Higher Education and Research Institutions to Vocational Technical Schools to Enhance Food Security in Southeast Asian Region. Learning from these experiences, it is important to conduct a regional webinar to share the experiences and developing a network among vocational schools in the region as well as short term training courses.

In 2020 the SMARTS-BE program has been consistently conducted by SEAMEO BIOTROP, focusing on the best agricultural practices for producing fruits by treating the fruit trees on the aspect of fruit tree architectures, fruit induction technology, harvesting technology, post-harvest technology and fruit-based products. However, due to Covid-19 pandemic, the technical assistances, training courses and seminars were conducted virtually as an adaptation to the New Normal Era. The webinar titled SMARTS-BE TALK SERIES have been conducted and 21 webinars have been planned.

Period	Activities	
2018	<ul style="list-style-type: none"> <li>• Desk studies and proposals development on non-seasonal fruits</li> <li>• Coordination meeting with the Directorate General of Vocational Education, Directorate of Vocational Senior High Schools of the Ministry of Education and Culture of the Republic of Indonesia to prioritize the vocational senior high schools (SMKs) that belong to the revitalization program according to the Presidential Instruction number 9/2016 on vocational school revitalization to improve the quality and competitiveness of Indonesian human resource</li> <li>• Kick off program by the Secretary General of the Ministry of Education and Culture of the Republic of Indonesia</li> <li>• Scientists recruitment coming from different institutions to be appointed as regional coordinators</li> <li>• Announcement to each SMK.</li> <li>• Selection, K=Criteria: agro-climatology, land availability, market capture, technological level, fruiting season, selling price.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Management structure development (Project Management Unit and Regional coordinators)</li> </ul>	
	<ul style="list-style-type: none"> <li>• Official launching of the SMARTS BE program by the Ministry of Education and Culture of the Republic of Indonesia</li> </ul>	
	<ul style="list-style-type: none"> <li>• MoU between SEAMEO BIOTROP and SMK, witnessed by the representative of the Ministry of Education and Culture of the Republic of Indonesia</li> </ul>	
	<ul style="list-style-type: none"> <li>• Coordination meeting on fruits selection guided by scientists to develop a proposal for each SMK</li> </ul>	
	<ul style="list-style-type: none"> <li>• Training of trainers for headmasters and teachers, regional coordinators, technicians in cooperation with BALITJESTRO in Batu, East Java</li> </ul>	
	<ul style="list-style-type: none"> <li>• Establishment of fruits gardens in SMK guided by regional coordinators, including site-species matching</li> </ul>	
	<ul style="list-style-type: none"> <li>• Headmasters, teachers, students established the fruit gardens (land preparation, seedling transportation, planting, maintenance)</li> </ul>	
	<ul style="list-style-type: none"> <li>• Progress report on fruit gardens establishment by headmaster and teachers guided by regional coordinators</li> </ul>	
	<ul style="list-style-type: none"> <li>• Publication on fruits trees establishment by scientists</li> </ul>	
	<ul style="list-style-type: none"> <li>• Note: monthly meeting of regional coordinators is needed to discuss the problems and alternative solutions</li> </ul>	
	2019	<ul style="list-style-type: none"> <li>• Maintenance of fruit trees gardens in each SMK by the teachers and students, supervised by headmasters in coordination with regional coordinators</li> </ul>
		<ul style="list-style-type: none"> <li>• Training course on fruit-based products and online marketing were conducted at SEAMEO BIOTROP with the technical assistance from Institut Pertanian Bogor (Bogor Agricultural University-IPB)</li> </ul>
		<ul style="list-style-type: none"> <li>• Training on fruit trees establishment was also conducted to 6 SMK impacted by natural disaster and other high schools who are willing to join the program</li> </ul>
<ul style="list-style-type: none"> <li>• Under the guidance of regional coordinators, development of Standard Operational Procedures on intensive fruit garden establishment and fruits-based products were made available by the SMK</li> </ul>		
<ul style="list-style-type: none"> <li>• Fruit tree architecture and integrated pest management were conducted to drive the growth and to obtain the healthy fruit trees</li> </ul>		
<ul style="list-style-type: none"> <li>• Training of Trainers on Optimizing Spatial Technology for Monitoring the Fruit Trees of SMARTS-BE Program. The use of drone was introduced for monitoring purpose to the participants</li> </ul>		
<ul style="list-style-type: none"> <li>• Drafts of scientific publications were made by the scientists using the data provided by the SMK</li> </ul>		
<ul style="list-style-type: none"> <li>• The results of SMARTS-BE Program were also presented in International Conference on Food and Economic Security and Environmental Sustainability, organized by Cagayan State University, Tuguegarao, the Philippines on 16-18 October 2019, titled Knowledge and Technology Transfer from Higher Education and Research Institutions to Vocational Technical Schools to Enhance Food Security in Southeast Asian Region</li> </ul>		

- 
- Technical assistance is continued by scientists as regional coordinators to explore success of the program in improving the capacity building in the vocational schools. SMARTS-BE Program has become one of their Teaching Factories (TEFA)
- 
- Development of fruit trees architecture and combining with flower induction technology provokes 60% of fruit trees bearing the fruits either in potted media or in the field. Each school has to make a paper according to their experiences in establishing fruit gardens or other fruit-based products
- 
- 2020
- Due to the Covid-19 pandemic, Project management Unit decided a series of webinar titled SMARTS-BE TALKS SERIES
- 
- Training of Trainers on Optimizing Spatial Technology for Monitoring the Fruit Trees of SMARTS-BE Program, was followed by 30 participants (headmasters and teachers) coming from 28 vocational schools. Fruit garden images were obtained by drone and were interpreted using ArcGIS programme and converted into Normalized Difference Vegetation Index (NDVI) to monitor pest and diseases development
- 
- It is important to conduct a regional webinar to share the experiences and developing a network among vocational schools in the region as well as short term training courses
-

SOLID RESOURCE BASE





## SOLID RESOURCE BASE

### ADMINISTRATION AND MANAGEMENT

#### Staff Development

In the Fiscal Year under review, the Centre implemented staff development program to more than 70% of staff members by sending them to attend training courses, conferences, seminars, workshops and symposia in Indonesia and abroad (Appendix 6).

Three staff members have been facilitated to pursue Postgraduate study with personal initiatives (self funded), namely:

1. Mr Lukman Haris, IT Services Unit Supervisor, for a Master's degree in computer science at Institut Pertanian Bogor (IPB-Bogor Agricultural University), since 2019;
2. Ms Tenni Wahyuni, General Administration Department Manager, for a Bachelor's degree in communication studies at Open Learning University, since 2019; and
3. Mr Zulkarnaen Noor Syarif, Document Controller and IT Assistant, for a Master's degree in computer science at Universitas Budi Luhur, since 2020.

#### Facility Improvement and New Equipment

##### A. Facility Improvement for FY 2019

During the Fiscal Year in review, the Department has conducted maintenance of various facilities (Table 1). Funding for facility maintenance comes from the Government of Indonesia. Photos of work results are presented in Appendix 7.

Table 1 Facility maintenance completed in the period of July 2019 - June 2020

No	Work Name	Company	Schedule of Work Implementation
1	Maintenance of SEAMEO BIOTROP Greenhouses	CV Mutiara	21 August 2019 – 19 September 2019
2	Repair of Auditorium	CV Jati Putra Mandiri	15 November 2019 – 5 December 2019
3	Maintenance of SEAMEO BIOTROP Greenhouses A and B	CV Mutiara	19 November 2019 – 6 December 2019
4	Maintenance of SEAMEO BIOTROP Greenhouses C and E	CV Premiereka Multi Struktur	19 November 2019 – 6 December 2019
5	Maintenance of SEAMEO BIOTROP Greenhouses K, L and M	CV Jati Putra Mandiri	19 November 2019 – 6 December 2019
6	Repair of Vertical Concrete Fences of Services Laboratory Building	CV Jati Putra Mandiri	20 November 2019 – 9 December 2019
7	Repair of Sewage Chamber	CV Mutiara	20 November 2019 – 9 December 2019
8	Wall Painting of Dormitory J	CV Premiereka Multi Struktur	21 November 2019 – 11 December 2019
9	Repair of Granite Walls in the Female Praying Room	CV Jati Putra Mandiri	21 November 2019 – 11 December 2019
10	Repair Road Entrance Gate of SEAMEO BIOTROP	CV Mutiara	21 November 2019 – 11 December 2019
11	Repair of Ablution Space and Ceiling	CV Mutiara	21 November 2019 – 11 December 2019

## B. Facility Improvement

The Facility Management Department also conducted significant facility improvement for some facilities to improve the physical performance of the Centre to make staff, researchers, and visitors feel more comfortable working or staying at the Centre. The facility improvement works conducted during the FY 2019/2020 are listed in Table 2.

Table 2 Facility maintenance completed in the period of July 2019 - June 2020

No	Work Name	Company	Schedule of Work Implementation
1	Granite Installation for stage area in the auditorium	CV Jati Putra Mandiri	28 February 2020 - 19 March 2020
2	Repair of men's bathroom in the auditorium	CV Mutiara	17 February 2020 - 17 March 2020
3	Repair of auditorium entrance area	CV Mutiara	4 - 24 March 2020
4	Maintenance of SEAMEO BIOTROP Greenhouses	CV Citra Karyatama	5 - 29 June 2020
5	Repair of a pathway to mushroom house	CV Jati Putra Mandiri	4 - 24 June 2020
6	Repair of ceiling at the Biotechnology Laboratory	CV Mutiara	4 - 24 June 2020

## C. Procurement of Laboratory Equipment for FY 2019

In the first half of the FY 2019/2020 several laboratory equipment had been purchased to support research works at some laboratories. The list of laboratory equipment purchased in the period of July 2019 - June 2020 is available in Appendix 8.

No	Work Name	Company	Schedule of Work Implementation
1	Procurement of Laboratory Supporting Equipment for FY 2019	CV Putra Jaya Sakti	23 September 2019 - 21 December 2019

## Financial Viability

In fiscal year (FY) 2019/2020, SEAMEO BIOTROP received USD 1,297,534 as Operating Fund from the Government of Indonesia (GoI) to cover staff salary and wages, operational expenses, and building and equipment maintenance. This amount is 26.39% lower than the previous fiscal year's 2018/2019 due to decreased allocated budget from the Government and budget efficiency due to pandemic.

The Centre also received the annual Special Education and Development Fund (SEDF) of USD 71,000 from SEAMEO Secretariat which is intended for conducting regional and international trainings and seminars, research, Governing Board Meeting (GBM), and personnel exchange. After deducting bank administrative charges, the Centre received a net SEDF amount of USD 70,995. During the FY 2019/2020 in review, SEAMEO BIOTROP receive Capital Fund from the GoI amount of USD 15,415.

The statement of operations and changes in fund balances for FY 2018/2019 compared to FY 2019/2020 is summarized in the Graphics of Statement of Operations and Change in Fund Balance (Figure 8).

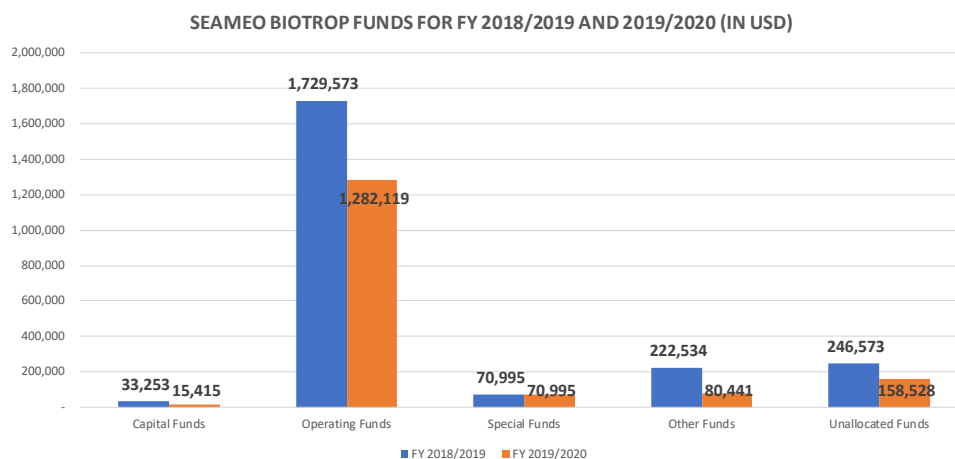


Figure 8 Operations and Change in Fund Balance

GoI fund support to the Centre for FY 2019/2020 decreased significantly due to Covid-19 Pandemic outbreak in Indonesia since the start of 2020. The GoI had to cut the budget of the Centre to reallocate the national budget and prioritize the fund to cover activities to prevent the spread of Covid-19. The Centre's earnings, from income generation activities were also decreased due to events postponement or cancellation, as well as some limitations in conducting events to prevent the spread of Covid-19.



# APPENDICES



## APPENDIX 1. ON-GOING NATIONAL RESEARCH

No	Title of Research Projects	Researcher/s	Objective(s)	Target Beneficiaries	Output and Impacts Produced	Funding Sources	Partners
1	Powder formulation of yeast to control ochratoxin-A (OTA) producing fungus in Arabica coffee	Prof. Dr. Okky Setyawati Dharmaputra	<ol style="list-style-type: none"> <li>To test some carrier materials and additives on the survival of yeast <i>C. krusei</i> BIO 211287.</li> <li>To test the effect of powder formulation in combination of yeast, carrier materials and additives on OTA production and the taste of Arabica coffee processed using semi-wet method.</li> </ol>	Farmers, exporters, entrepreneurs	<ol style="list-style-type: none"> <li>Inexpensive carrier materials to ensure long time survival and bioperformance of <i>C. krusei</i> BIO 211287.</li> <li>Powder formulation which is a combination of yeast, carrier materials and additives to control OTA production and increase the taste of Arabica coffee processed using semi-wet method.</li> </ol>	DIPA 2020	None
2	Stored-product Insect Infestation on Rice: Analysis of Economic Losses and Development of Fumigation Protocol to Manage Phosphine Resistant Strain of <i>Cryptolestes</i> spp. (Coleoptera: Laemophloeidae) in Rice Storage Facilities	Dr. Idham Sakti Harahap	<ol style="list-style-type: none"> <li>To study the effects of initial level of stored product insect population and storage period against population growth of stored product insect and losses in rice weight.</li> <li>To determine the level of phosphine resistance in <i>Cryptolestes</i> sp. collected from various locations in Indonesia, i.e. western, central, and eastern parts of Indonesia.</li> <li>To develop specific fumigation protocol in overcome existing resistant strains of <i>Cryptolestes</i> sp. in Indonesia.</li> </ol>	Food and feed warehouses, government institutions, fumigators	<ol style="list-style-type: none"> <li>Economic threshold for losses in rice weight due to stored product insect attack during rice storage.</li> <li>Specific and appropriate phosphine fumigation protocols to overcome resistant strains of <i>Cryptolestes</i> spp. in Indonesia.</li> </ol>	DIPA 2020	BULOG/ Indonesia Logistics Bureau

3	Development of Mint Oil Nano-Encapsulation as Biofumigant for Controlling Stored Product Insect Pest <i>Tribolium castaneum</i>	Dr Sri Yuliani	<ol style="list-style-type: none"> <li>1. To develop appropriate techniques in forming mint oil nano-encapsulation as biofumigant.</li> <li>2. To generate an accurate formulation to develop mint oil nano-encapsulation as biofumigant.</li> <li>3. To evaluate the toxicity of biofumigant made of mint oil nano-encapsulation against <i>T. castaneum</i></li> </ol>	Scientific community, government institutions, local community	Biofumigant made of mint oil nano-encapsulation against <i>T. castaneum</i> .	DIPA 2020	Nanotechnology Laboratory, Indonesian Center for Agricultural Postharvest Research and Development
4	The Use of Watermelon Rind as Feed Ingredient for Redclaw Crayfish ( <i>Cherax quadricarinatus</i> )	Dr Ichsan Achmad Fauzi	To evaluate the watermelon rind containing watermelon pulp as feed ingredient to increase the arginine availability in supporting growth performance of red claw crayfish, <i>Cherax quadricarinatus</i>	Crayfish farmers, aqua feed manufacturers	<ol style="list-style-type: none"> <li>1. Method for processing watermelon rind to be used as aquafeed ingredient.</li> <li>2. Watermelon rind meal for aquafeed ingredient.</li> <li>3. Research manuscript to be published in international scientific journal.</li> <li>4. Availability of local and inexpensive ingredient for aquafeed to support aquaculture.</li> <li>5. Low protein requirement for culturing crayfish through utilization of functional aquafeed ingredient</li> <li>6. Functional aquafeed ingredient to improve crayfish metabolism</li> </ol>	DIPA 2020	None



5	Biological Studies of <i>Chimonobambusa quadrangularis</i> : An Exploration of the Potency of Its Consumable Young Shoot	Dr. Sri S. Tjitrosoedirdjo	<ol style="list-style-type: none"> <li>To quantify bud bank dynamics throughout an annual cycle of the perennial <i>C. quadrangularis</i> bamboo</li> <li>To determine the relative contributions of various bud populations to culm and rhizome recruitment</li> <li>To evaluate the investment in guerilla versus phalanx tillers of <i>C. quadrangularis</i> under undisturbed field conditions</li> <li>To study the effects of plant growth regulators to the recruitment of culm</li> </ol>	Scientific community, government institutions, private sectors, local community	<ol style="list-style-type: none"> <li>Method for mass producing bamboo shoots of <i>C. quadrangularis</i></li> <li>Scientific knowledge on developing <i>C. quadrangularis</i> rhizome for vegetative reproduction</li> <li>Scientific knowledge on strategic control of <i>C. quadrangularis</i></li> </ol>	DIPA 2020	GGPNP (Gunung Gede Pangrango National Park), Cibodas section, Mandalawangi Resort
6	Developing Ecosystem Health Index in Indonesia (3 <sup>rd</sup> Year)	Prof Dr Ir Arief Sabdo Yuwono	<ol style="list-style-type: none"> <li>To compile and map health status of aquatic ecosystems, terrestrial ecosystems and artificial ecosystems in selected areas of Indonesia.</li> <li>To formulate a quantitative approach for developing an ecosystem health assessment system that can form the basis for national environmental policy making.</li> <li>To develop a single index representing the health of an ecosystem that includes aquatic, terrestrial, and artificial ecosystems using a quantitative approach.</li> </ol>	Scientific community, government institutions, private sectors and local community	<ol style="list-style-type: none"> <li>Compiled data of ecosystem health indices that includes aquatic, terrestrial and artificial ecosystems that can be applied in Indonesia.</li> <li>Publication in international scientific journals (once per year).</li> <li>A guidebook and software (electronic spreadsheet) of ecosystem health assessments with quantitative approaches to be sent to ministries related to ecosystem management (Ministry of Environment and Forestry, Ministry of Marine Affairs and Fisheries).</li> </ol>	GOI-DIPA	Ministry of Environment and Forestry, Ministry of Marine Affairs and Fisheries

7	Application of Selected Microbes and Modified Organic Soil Amendment on Selected Plant Species to Restore Degraded Karst Area in Yogyakarta	Dr Dewi Wulandari	<ol style="list-style-type: none"> <li>To perceive the connection and effect of aboveground vegetation, edaphic property, and soil microbiome in karst rocky desertification area.</li> <li>To investigate the effect of modified soil amendment on plant growth performance when growing with and without pot organic in karst field.</li> <li>To obtain a better understanding on the effects of plantation together with microbes and soil amendment applications on carbon sequestration in karst area.</li> </ol>	Scientific community, government institutions, local community	<ol style="list-style-type: none"> <li>Strategic application of soil organic amendment to accelerate the success of plantation in karst area.</li> <li>Gas emission reduction as one indicator of plantation success in karst area.</li> </ol>	DIPA 2020	Universitas Gadjah Mada
8	The Technology of using Endophytic Bacteria for Improving the Health of Pepper Seedling and Plant	Dr Ir Abdul Munif, MAgSc	<ol style="list-style-type: none"> <li>To develop a technology of using endophytic bacteria as bioinoculants to produce healthy pepper seedlings.</li> <li>To multiply and formulate the endophytic bacteria as a driver for improving growth and health of pepper plants.</li> <li>To develop a technology for producing biopesticides using endophytic bacteria to control yellow disease in pepper.</li> <li>To evaluate the stability and growth of endophytic bacteria formulations in several carriers and formulas.</li> </ol>	Scientific community, government institutions, local community	<p>Several applicable technologies of using endophytic bacteria to improve the health of pepper plant and to control yellow disease, in accordance with the principles of healthy plant cultivation and integrated pest management</p>	DIPA 2020	None

9	Development of Spatial Decision Support System for Village Based National Rice Production (Phase 1 : Developing Baseline for Spatially-Explicit Dynamic Model)	Dr Impron MAgrSc	<ol style="list-style-type: none"> <li>1. To identify the variety, age and health of paddy plantation based on spectral signature reflectance of paddy plantation (1<sup>st</sup> year).</li> <li>2. To develop a baseline for rice growth and development model (1<sup>st</sup> and 2<sup>nd</sup> year).</li> <li>3. To build a spatial-explicit dynamic model, in order to determine growth, yield, water balance, nutrient status, as well as disease status (1<sup>st</sup> and 2<sup>nd</sup> year).</li> <li>4. To build a model for determining DSS for precision crop and field management (e.g. crop and field management, fertilizer management,</li> <li>4. water management, pest and disease management, CSA (Climate Smart Agriculture), adaptation/mitigation option and GHG (Greenhouse Gas) inventory) (2<sup>nd</sup> year).</li> <li>5. To develop an information system for delivering information to each stakeholder starting from government level up to farmer groups level (3<sup>rd</sup> year).</li> </ol>	Scientific community, government institutions, local community, farmer groups and private companies	Applicable support system for managing agricultural inputs through sustainable management system, such as using the right size and quantity of materials and tools/facilities, on-time handling, proper location and methods, including processing, planting, fertilizing, pest and disease handling. The support system will guarantee not only the sustainability of agricultural activities, but also environment.	DIPA 2020	None
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10	Genotyping Method to Determine Sengon ( <i>Falcataria moluccana</i> ) Resistance to Borkor Pest ( <i>Xystrocera festiva</i> ) and Gall Rust ( <i>Uromykladium falcatarium</i> ) Disease using Genomics Data	Dr Ir Ulfah J. Siregar, MAgr	<ol style="list-style-type: none"> <li>To evaluate sengon inheritance pattern of resistance to stem borer pest (<i>Xystrocera festiva</i>) and gall rust disease (<i>Uromykladium falcatarium</i>) in a progeny test.</li> <li>To obtain sengon clone/family that is resistant to boktor pests and gall rust disease to be registered as a new variety, and as a forerunner to the establishment of a superior sengon seed plantation.</li> </ol>	Scientific community, government institutions, local community, farmers and private companies	<ol style="list-style-type: none"> <li>Protocols for producing expression of some microsatellite-related gene(s) by RT-PCR.</li> <li>New sengon clone/family that is resistant to boktor pests and gall rust disease.</li> <li>Publications in international scientific journals.</li> </ol>	DIPA 2020	Institut Pertanian Bogor (IPB-Bogor Agricultural University)
11	Integrating Palm Oil Plantation with Cattle Farm to Increase Farmer's Income by Utilizing Palm Oil Wastes, Cattle Manure and Intercropping Products	Prof Dr Ir M. Winugroho, MSc,	<ol style="list-style-type: none"> <li>To obtain sources of animal feed for fattening and breeding of cattle from cover crops, palm oil fronds, palm kernel cake, palm leaves and logged young palm oil trunks.</li> <li>To obtain biogas energy by applying biogas systems for farmers and the community around the development site and industry.</li> <li>To reduce the emission of methane gas.</li> <li>To provide additional income from intercropping products.</li> </ol>	Scientific community, government institutions, local community, farmers and private companies	Sources of organic materials for improving soil quality by utilizing cattle manure and palm oil wastes such as palm leaves, young palm leaves, logged young trunks, empty fruit bunches, dried sludge, palm oil mills, fly ash.	DIPA 2020	None

12	The Application of Dark Septate Endophytic (DSE) Fungi to Promote Rice Production in Acidic Stress Conditions in Kalimantan Swampland	Dr Surono, SP, MAgr	<p>1. To obtain information on the ecological roles in the symbiotic relationship between DSE fungi and rice plant under acidic stress conditions in a field.</p> <p>2. To obtain DSE biofertilizer formula that have function as rice growth promoter in swamp soil having very high acidity conditions.</p>	Scientific community, government institutions, local community, farmers and private companies	Information on DSE diversity in the tropics, especially in Indonesia.	DIPA 2020	None
13	Increasing the Added Value of Styrox Essential Oil through Innovation of Personal Care and Beauty Products	Dr Aswandi, SHut, MSI	<p>1. To obtain information on refining technology for optimizing yields of incense oil and its superior phytochemical content.</p> <p>2. To identify the physical-chemical characters of crude and refined incense oil.</p> <p>3. To enhance the use of incense oil by producing Styrox soap, lotion, perfume and other herbal beauty ingredients.</p>	Scientific community, government institutions, local communities, farmers and private companies	<p>1. Standardized technique for harvesting and storing styrox essential oil.</p> <p>2. Standardized technique for identifying and determining the macro-organic and micro-organic resin content.</p> <p>3. Standardized technique for clinical test of styrox personal care and beauty products following safety regulations.</p>	DIPA 2020	Center of Biopharmaca Laboratory, Institut Pertanian Bogor (IPB-Bogor Agricultural University)
14	Collection of Reproductive Materials of Ebony ( <i>Diospyros celebica</i> ) based on Genetic Information	Prof Dr Ir Iskandar Z. Siregar, MForSc	To identify ebony characteristics in various natural forest populations in Sulawesi by using microsatellite markers	Scientific community, government institutions, local communities, farmers and private companies	Genetic information and data on ebony population based on microsatellite markers that can be used to develop conservation method for designing ebony genetic resources and procuring eminence ebony seeds in accordance with ecosystem restoration guidelines.	DIPA 2020	None

15	Propagation of Eha ( <i>Castanopsis buruana</i> Miq.) in Supporting the Development of Plantation Forest in Sulawesi	Prof Dr Ir Husna, MP	<ol style="list-style-type: none"> <li>To assess data and information on the growth success of Eha natural seedlings using different treatments of lid, media and seedlings height.</li> <li>To assess data and information on the success of Eha shoot cutting without and with ectomycorrhiza inoculation applied in different media.</li> <li>To assess data and information on the success of eha cuttings dan air layering affected by IBA.</li> <li>To assess data and information on initial symbiosis between ectomycorrhiza and Eha natural seedlings.</li> </ol>	Scientific community, government institutions and local communities	<ol style="list-style-type: none"> <li>Guidelines on producing Eha seedlings for farmers.</li> <li>Vegetative propagation technique of <i>C. buruana</i> to support Eha tree domestication and Eha forest development in Sulawesi.</li> </ol>	DIPA 2020	None
16	Genetic Diversity and Structure Analysis of <i>Sipuncula</i> in the Coastal Zone of Banda Naira	Dr Majarjana Krisanti, SPi, MSI	<ol style="list-style-type: none"> <li>To describe the types of <i>Sipuncula</i> found in Banda Naira coastal zone.</li> <li>To determine the potential of <i>Sipuncula</i> biomass to be used in intertidal management in Banda Naira coastal zone.</li> <li>To determine the value of <i>Sipuncula</i> genetic variability in the Banda Naira coastal zone.</li> </ol>	Scientific community, government institutions and local communities	Data and Information on species classification, biomass potential and genetic diversity of <i>Sipuncula</i> in the tidal flat of Banda Naira, Central Maluku Regency.	DIPA 2020	None

17	Floating Garden for Acid Mine Drainage Treatment	Armaiki Yusmur, MSI	<ol style="list-style-type: none"> <li>1. To develop local wisdom in utilizing open waters by implementing modern technology in water treatment.</li> <li>2. To review the use and performance of floating garden for water quality abatement.</li> <li>3. To recommend approaches for retrofitting in situ retention ponds with floating garden (size, relative surface cover, positioning), as passive treatment systems in pit lake.</li> </ol>	Scientific community, government institutions, local communities, farmers, private companies, mining practitioners	Technology package to be used in pit lake management and in agricultural cultivation in the pit lake in order to provide optimal benefits for improving water quality and for environmentally-friendly use of suboptimal land.	DIPA 2020	None
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## On-Going Research Projects from PhD Thesis Support Grantees

No	Title of Research Projects	Researcher/s	Objective(s)	Target Beneficiaries	Output and Impacts Produced	Funding Sources	Partners
1	Haplotype Diversity and Population Subdivision of the Indian Horseshoe Crab ( <i>Tachypleus gigas</i> ) for Conservation Monitoring in Indonesia	Naila Khuril Aini	<ol style="list-style-type: none"> <li>To provide updated IUCN status of the Indian Horseshoe Crab (<i>Tachypleus gigas</i>) in Indonesia.</li> <li>To identify the haplotype diversity as the basic data to crosscheck Indonesia horseshoe crab biodiversity with other horseshoe crab from several other countries.</li> <li>To determine the population structure and gene flow of horseshoe crab in the studied locations.</li> <li>To arrange effective conservation management for Indonesian horseshoe crab.</li> </ol>	Scientific community	Conservation management plan for Indonesian horseshoe crab ( <i>Tachypleus gigas</i> ).	DIPA 2020	None
2	The Use of Local Marine Bacteria from Indonesian Environment for Developing Textiles Dye (Indigo)	Elvi Yetti, MSc	<ol style="list-style-type: none"> <li>To select wild local marine bacteria from Indonesian environment to be bio-synthetically processed as indigo dye by indole bio-transformation method using naphthalene dioxygenase enzyme.</li> <li>To synthesize indigo by using indole biotransformation from selected marine bacteria.</li> <li>To analyze the indigo produced by using HPLC.</li> </ol>	Scientific community	Data and information on the biodiversity level of marine organisms as prime target for bio-prospecting	DIPA 2020	None



3	Development Study of Kampung Chicken ( <i>Gallus gallus domesticus</i> ) Reared with Free Range System In Peatland, Riau Province	Deni Fitra, SPT, MP	<ol style="list-style-type: none"> <li>1. To evaluate the potential of peatland ecosystems for rearing kampungchicken based on land limiting factors and livestock capacity.</li> <li>2. To review and analyze the free range chicken rearing system, integrated with planting of <i>Indigofera zollingeriana</i> plants to elevate physiological conditions, performance and quality of kampung chicken meat.</li> </ol>	Scientific community	Data and information on rearing kampung chicken with the free range system integrated with planting of <i>Indigofera zollingeriana</i> plants in peatland environment.	DIPA 2020	None
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## Completed National Research Projects from In-House Researchers and Partner Agencies

No	Title of Research Projects	Researcher/s	Objective(s)	Target Beneficiaries	Output and Impacts Produced from Previous Years	Funding Sources	Partners
1	Development of Invasive Alien Plant Species Management in the Rehabilitating Invaded Ecosystem at Gunung Gede and Pangrango National Park	Dr. Soekisman Tjitrosuedirdjo, MSc	<ol style="list-style-type: none"> <li>To rehabilitate the invaded and degraded forest impacted by Invasive Alien Plant Species by reintroducing local tree species that can fight the invasion of invasive plant species.</li> <li>To contribute to the management of Ciliwung Watershed in preventing the repetitive occurrence of flood in downstream Ciliwung Watershed, especially in Jakarta, the capital city of Indonesia, by planting local tree species in Gunung Gede and Pangrango National Park.</li> <li>To eradicate <i>C. quadrangularis</i> from Gunung Gede and Pangrango National Park area.</li> </ol>	Scientific community, government institutions	<ol style="list-style-type: none"> <li>The establishment of planted local tree species seedlings measured by survival, growth and canopy development to outcompete the nearby invasive plant species.</li> <li>Selected herbicides to eradicate <i>C. quadrangularis</i>. The herbicides selections will be narrowed to those ones that are most effective in eradicating <i>C. quadrangularis</i>.</li> </ol>	GOI-DIPA	Center for Mount Gede Pangrango National Park (Balai Besar Taman Nasional Gunung Gede Pangrango)
2	Extraction and Identification of Pheromone Compounds from Major Insect Pests of Stored Coffee Beans	Dr. Idham Sakti Harahap	<ol style="list-style-type: none"> <li>To identify and obtain information on insect pests species diversity of stored coffee beans.</li> <li>To analyze damage levels and weight loss on stored coffee beans due to insect pests.</li> <li>To isolate and identify chemical compound of pheromones extracted from insect pests of stored coffee beans.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>Information on insect pests species diversity of stored coffee beans and the damages caused.</li> <li>Availability of pheromone extracted from insect pests of stored coffee beans that can be used to develop pheromone traps for monitoring and managing population of coffee bean insect pests.</li> </ol>	GOI-DIPA	Center of Forensic Laboratory, Indonesia Police Headquarter, Jakarta (Puslabfor Laboratory, Mabes Polri, Jakarta)

3	Restoration strategy on Marginal Karst Land in Imogiri Yogyakarta using Biological Agent: Phase 1. Application of Selected Microbes and Modified Organic Soil Amendment on Selected Plant Species under Nursery condition	Dr Dewi Wulandari	<ol style="list-style-type: none"> <li>1. To investigate plants' responses toward organic soil amendment added to limestone soil under nursery condition.</li> <li>2. To obtain information on inoculation effect of beneficial soil microorganisms applied to selected plant species grown on limestone soil in addition to organic soil amendment under nursery condition.</li> <li>3. To get a better understanding on the effect of plantation on carbon sequestration in limestone soil.</li> </ol>	Scientific community, government institutions, private enterprises	<ol style="list-style-type: none"> <li>1. Recommendation on solving plantation problem in karst ecosystem.</li> <li>2. New knowledge on the potential use of beneficial soil microorganisms together with organic soil amendment in supporting revegetation of degraded karst ecosystem.</li> <li>3. Information on the benefit of plantation to reduce gas sequestration in karst ecosystem.</li> </ol>	GOI-DJPA	Faculty of Forestry, Universitas Gadjah Mada, Universitas Islam Indonesia
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4	Developing Ecosystem Health Index in Indonesia (2 <sup>nd</sup> Year)	Prof Dr Ir Arief Sabdo Yuwono	<p>1. To compile and map health status of aquatic ecosystems, terrestrial ecosystems and artificial ecosystems in selected areas of Indonesia.</p> <p>2. To formulate a quantitative approach for developing an ecosystem health assessment system that can form the basis for national environmental policy making.</p> <p>3. To develop a single index representing the health of an ecosystem that includes aquatic, terrestrial, and artificial ecosystems using a quantitative approach.</p>	Scientific community, government institutions, local community	<p>1. Compiled data of ecosystem health indices that includes aquatic, terrestrial and artificial ecosystems that can be applied in Indonesia.</p> <p>2. Publication in international scientific journals (once per year).</p> <p>3. A guidebook and software (electronic spreadsheet) of ecosystem health assessments with quantitative approaches to be sent to ministries related to ecosystem management (Ministry of Environment and Forestry, Ministry of Marine Affairs and Fisheries).</p> <p>4. An ecosystem health assessment system by implementing the health index nationally and uniformly. In addition, environmental authorities in Indonesia can use this index as the basis for environmental law enforcement policy and environmental protection and management.</p>	GOI-DIPA	Ministry of Environment and Forestry, Ministry of Marine Affairs and Fisheries, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Universitas Islam Indonesia
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<p>5 Sengon (<i>Falcataria moluccana</i>) Resistance towards Borkor Pest (<i>Xystrocera festiva</i>) and Gall Rust (<i>Uromycladium tepperianum</i>) Part IV: Genomic Analysis and Gene Expression Study</p>	<p>Dr Ir Ulfah Juniarti Siregar, MAGr</p>	<p>1. To obtain transcriptomic sequences by Next Generation Sequencing (NGS) from both sengon resistant and susceptible accessions against pests and diseases.  2. To optimize the protocols for expression of some sequenced gene(s) by RT-PCR.  3. To obtain new SNIP markers for sengon resistant accessions against pests and diseases.  4. To identify Open Reading Frames (ORFs) from transcriptomic sequence analysis and Blastx.</p>	<p>Scientific community, government institutions, private, enterprises, and local community</p>	<p>1. Transcriptomic sequences by Next Generation Sequencing (NGS) from both sengon resistant and susceptible accessions against pests and diseases.  2. Optimized protocols for expression of some sequenced gene(s) by RT-PCR.  3. New SNIP markers for sengon resistant accessions against pests and diseases.  4. Identified Open Reading Frames (ORFs) from transcriptomic analyses and BLASTX.  5. Publications in international scientific journals</p>	<p>GOI-DIPA  Forest Management Unit of Kediri, East Java Province, community forests in West Java Province, the Center for Biotechnology Research, Indonesian Institute of Sciences (KPH Kediri, Jawa Timur, serta tegakan hutan rakyat di Jawa Barat; Puslit Bioteknologi-LIP)</p>
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6	Membrane Electrospinning Based on Carbon Nanotubes from the Trunk and Empty Bunches of Oil Palm for Water Purification	Dr Adisti Permatasari Putri Hartoyo, SHut, MSi	<ol style="list-style-type: none"> <li>To isolate and characterize OPEFBs carbon nanofibers isolated by thermo mechanical method.</li> <li>To synthesize nanocomposite membrane (film, electrospun) of chitosan/ OPEFBs carbon nanofibers.</li> <li>To examine the potency of nanocomposite membrane for water purification.</li> </ol>	Scientific community, government institutions, local community	<ol style="list-style-type: none"> <li>Comprehensive analysis of research results along with factual data which will be the reporting materials for SEAMEO BIOTROP.</li> <li>Three international publications that will be published in Scopus indexed international scientific journals, including BIOTROPIA journal of SEAMEO BIOTROP.</li> <li>Registration of this study's results to the 111 Indonesian innovations in 2019 under name of IPB University and SEAMEO BIOTROP with advanced materials scheme.</li> <li>The prototype results of this study.</li> <li>Presentation of this study's results at national and international seminars or conferences.</li> </ol>	G01-DIPA	Department of Silviculture, Faculty of Forestry, Institut Pertanian Bogor (IPB-Bogor Agricultural University); Biophysics Laboratory, Department of Physics IPN (nanomaterial isolation, XRD and FTIR analysis); Department of Biomaterial, Indonesian Institute of Sciences in Cibinong (mechanical treatment for isolating nanomaterial, SEM and disc milling); Department of Physics, Indonesian Institute of Sciences in Serpong (TEM and TGA analyses); Univeritas Indonesia (TEM, STA and water analyses); Biochemistry Laboratory, Institut Pertanian Bogor (IPB-Bogor Agricultural University), (nanomaterial isolation, antibacterial and fungi analyses); Universitas Gadjah Mada (TEM analysis); PT Perkebunan Nusantara VIII; IPB Culture Collection; CIFOR (Center for International Forestry Research)
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7	Achievements in Mangrove Restoration by Cultivating <i>Sonneratia</i> sp. in Berbak and Sembilang National Park	Sri Utami	<ol style="list-style-type: none"> <li>1. To study seedling production technique of <i>Sonneratia</i> sp. starting from seeds.</li> <li>2. To identify pests and diseases occurred in mangrove nursery.</li> <li>3. To evaluate the incidence and intensity of pests and diseases in the nursery.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>1. Seedling production technique of <i>Sonneratia</i> sp. starting from seeds.</li> <li>2. Information on pests and diseases species attacking mangrove plants in the nursery.</li> <li>3. Information on incidences and intensity levels of pests and diseases attacking mangrove crops in nurseries.</li> </ol>	GOI-DIPA	Center for Berbak and Sembilang National Park; Center for Forest Research and Development; Ministry of Environment and Forestry <i>(Balai Taman Nasional Berbak dan Sembilang, Pusat Penelitian dan Pengembangan Hutan, Kementerian Lingkungan Hidup dan Kehutanan)</i>
8	The Role of Mangrove Ecosystem in Supporting Policy and Strategy for Managing Sustainable Mangrove Ecosystem	Rommy Qurniati	<ol style="list-style-type: none"> <li>1. To make inventories and analyze mangrove ecology, flora and fauna diversities and land cover change.</li> <li>2. To develop mapping zone of flora and fauna distributions in mangrove ecosystem.</li> <li>3. To analyze social and economic of local community.</li> <li>4. To assess economical values of mangrove ecosystem.</li> <li>5. To formulate appropriate management strategies for sustainable mangrove development.</li> </ol>	Scientific community, government institutions, private enterprises, and local community	<ol style="list-style-type: none"> <li>1. Map of mangrove land cover change.</li> <li>2. Map of flora and fauna zonation in mangrove ecosystem.</li> <li>3. Policy and strategy of sustainable mangrove development.</li> <li>4. Articles published in BIOTROPIA Journal.</li> </ol>	GOI-DIPA	Universitas Lampung

9	Contributions of Traditional and Indigenous Practices to Ecological Restoration of Selected Watersheds/Landscapes in Indonesia and the Philippines	Christine Wulandari, PhD	<p>1. To assess the current state of ecological conditions (i.e., species diversity or biodiversity, vegetation/land uses, canopy cover, soil fertility).</p> <p>2. To document the traditional and indigenous practices of the local communities in managing forest resources and ecosystem.</p> <p>3. To examine the roles and contributions of traditional and indigenous practices in ecological restoration in selected landscapes.</p> <p>4. To formulate policy, technical and practical recommendations toward integrating traditional and indigenous practices in forest and ecological restoration efforts in the two collaborating countries.</p>	Scientific community, government institutions, private enterprises and local community	<p>1. Qualitative data generated from in-depth documentation of indigenous and local practices in ecological restoration and/or preservation, such as anecdotes and actual experiences including their perceived and observed contributions to ecological restoration.</p> <p>2. Quantitative data generated from biodiversity assessment, plant cover and vegetation analysis, as well as soil fertility analysis, which are among parameters and indicators of ecological restoration/preservation.</p> <p>3. Recommendations toward the developing effective mechanisms for incorporating traditional knowledge and practices into ecological restoration efforts of the government and other sectors.</p>	GOI-DIPA University of the Philippines at Los Baños
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10	Assessing Tropical Forest Soil Microbiome in Natural Forest, Industrial Forest and Oil Palm Plantation	Dr Neo Endra Lelana	<ol style="list-style-type: none"> <li>1. To evaluate soil microbiome from tropical forests and to study the effect of environmental changes toward soil microbiome and plants health.</li> <li>2. To analyze soil microbiome from natural forests and industrial forest plantations by testing the influence of plant species and its diversity toward microbial community.</li> <li>3. To test soil chemical content and its relations to the changes in microbial community.</li> <li>4. To measure plant disease incidences by identifying the relationships between soil microbiome and plant health.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>1. Information on changes of soil microbiome affected by tropical forests conversion activities.</li> <li>2. Information on soil chemical content and its relations to the changes in microbial community.</li> <li>3. Information on the relationships between soil microbiome and plant health.</li> </ol>	GOI-DIPA	Research Institute for Environment and Forestry, Palembang (Balai Penelitian Lingkungan Hidup dan Kehutanan Palembang)
11	Exploration of Mangrove Derived Endophytic Fungi for Bioproduction of Antioxidant and Anticancer Agent	Siti Irma Rahmawati, SPi, MAgr, PhD	<ol style="list-style-type: none"> <li>1. To isolate mangrove derived endophytic fungi.</li> <li>2. To identify the highest bioactivity (antioxidant and anticancer) from isolated mangrove derived endophytic fungi.</li> <li>3. To profile metabolite secondary compound from the highest activity isolated mangrove derived endophytic fungi.</li> <li>4. To conduct molecular identification of the chosen mangrove derived endophytic fungi.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>1. Invention for anticancer agent from mangrove endophyte fungi.</li> <li>2. Bioproduction from mangrove endophyte fungi.</li> <li>3. Metabolite secondary from mangrove endophyte fungi.</li> <li>4. Paper publication in international scientific journals.</li> </ol>	GOI-DIPA	Research Center for Natural Products, Indonesian Institute of Sciences, in Gunung Kidul, Yogyakarta (Pusat Penelitian Bahan Alam, Lembaga Ilmu Pengetahuan Indonesia di Gunung Kidul, Yogyakarta)

12	Dark Septate Endophytic Fungi (DSE) Diversity from Kalimantan Swamp Land Ecosystems and Their Role as Rice Growth Promoter under Acidic Stress Condition	Dr Surono, SP, MAgr	<p>1. To investigate the diversity of dark septate endophytic fungi in tropical swamp ecosystem having unique characteristics in Kalimantan-Indonesia.</p> <p>2. To obtain selected dark septate endophytic fungi (DSE) from tropical swamp ecosystem in Indonesia having the capability in promoting rice growth under acidic stress conditions.</p> <p>3. To obtain information on ecological roles in symbiotic relationship between DSE fungi and rice plant under acidic stress conditions.</p> <p>4. To obtain the DSE bio-fertilizer prototype based on greenhouse trials having function as rice growth promoter in swamp soil with very high acidity conditions.</p>	Scientific community, government institutions, private enterprises and local community	<p>1. New information related to DSE diversity from peatland ecosystem and their roles as rice growth promoter under acidic stress conditions.</p> <p>2. Collection of selected DSE fungi originated from tropical swampland ecosystems in Indonesia.</p> <p>3. Information on ecological roles in symbiotic relationship between DSE fungi and rice plant under acidic stress conditions.</p> <p>4. Biofertilizer prototype based on DSE fungi having function as rice growth promoter under abiotic stress conditions.</p> <p>5. Scientific publication of the project result in international scientific journals and patent of biofertilizer based on DSE fungi for promoting rice productivity in swampland.</p>	GOI-DIPA	Soil Chemistry Laboratory of Soil Research Institute; Research Institute for Swampland Agriculture; Indonesian Spice and Medicinal Crops Research Institute (Laboratorium Kimia Tanah, Lembaga Penelitian Tanah Indonesia, Bogor; Balai Penelitian Pertanian Lahan Rawa; Balai Penelitian Tanaman Rempah dan Obat)
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13	Assessing Mangrove Cover Change and the Vulnerability of Coastal Community Livelihoods for Adaptation Strategies toward Climate Change Impact in South Sulawesi	Abdul Malik, ST, MSI, PhD	<p>1. To assess changes on mangrove cover and vulnerability levels of coastal community livelihoods affected by community and climate changes for adapting strategies in South Sulawesi.</p> <p>2. To identify changes on mangrove cover in the last three decades using remote sensing approach.</p> <p>3. To identify climate change impacts on the welfare of coastal community livelihoods, the livelihood dependence on mangrove ecosystems and the community's ability to handle climate change and mangrove deforestation impacts.</p>	Scientific community, government institutions, private enterprises and local community	<p>1. Data and information related to changes on mangrove cover.</p> <p>2. Data and information related to climate change impacts on the welfare of coastal community livelihoods, the livelihood dependence on mangrove ecosystems, the community's ability to handle climate change and mangrove deforestation impacts.</p> <p>3. Data and information on, vulnerability level of coastal community livelihoods affected by mangrove exploitation and climate change.</p> <p>4. Recommendations on adaptation plans to enhance mangrove ecosystem resilience and livelihood welfare.</p>	GOI-DJPA	Universitas Negeri Makassar
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14	Effectiveness of Science-based Mangrove Restoration in Peninsular Malaysia	Dr. Onrizal	<p>1. To re-evaluate the outcome of previous mangrove replanting programs in Peninsular Malaysia and northern Sumatra.</p> <p>2. To determine the drivers of the successes or failures of previous mangrove replanting programs.</p> <p>3. To identify mangrove areas in Peninsular Malaysia and northern Sumatra having major shoreline erosion.</p> <p>4. To provide a customized action plan in dealing with major shoreline erosion.</p> <p>5. To provide a supply of 10,000 seedlings of mangrove species, except genus Rhizophora, for the subsequent mangrove replanting program.</p>	Scientific community, government institutions, private enterprises and local community	<p>1. Identified drivers of successes and failures of mangrove replanting programs in Peninsular Malaysia and northern Sumatra (expected impact factor: 4.0)</p> <p>2. Identified major erosion events in mangroves areas in Peninsular Malaysia and northern Sumatra using the Shoreline Video Assessment Method (expected impact factor: 3.0)</p> <p>3. Action plan for shoreline restoration in areas having major erosion events.</p> <p>4. Policy recommendations for shoreline restoration in areas having major erosion events, submitted to the Forestry Department of Peninsular Malaysia</p>	<p>GOI-DIPA</p> <p>Department of Forestry of Malaysian Peninsular; Guangxi University, China, Universiti Kebangsaan Malaysia</p>
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15	The Potential of Sentinel-1 Imagery in Developing Soil Water Content Model and Determining Soil Workability Level	Harry Imantho, MSc	<ol style="list-style-type: none"> <li>To measure and analyze temporal characteristics of soil physics and mechanic characteristics, namely soil water content, soil suction, bulk density and soil matric suction and soil cone index (soil penetration resistance).</li> <li>To perform analysis of Sentinel-1 backscatter value and soil water content in sugarcane plantation area.</li> <li>To develop empirical model/formula to calculate soil moisture content and soil workability levels based on Sentinel-1 data.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>Empirical model to calculate soil moisture content and soil workability levels based on Sentinel-1 data.</li> <li>The empirical model can be used for retrieving and monitoring the status of soil water content in sugarcane plantation area.</li> <li>Information generated by this model can feed further analysis on planning and management agricultural inputs such as selection of agricultural machineries, scheduling of agricultural machineries' operation, route planning, planning of fertilizer application and irrigation management in sugarcane plantation area</li> </ol>	GOI-DJPA	Indonesian Sugar Research Institute/ P3GI; PT Perkebunan Nusantara X of Kediri, East Java Province
16	Development of Mint Oil Nanoformulation and Assessment of Its Effectiveness Against Three Stored Product Insect Pests	Sri Widayanti, MSI	<ol style="list-style-type: none"> <li>To determine the best material for packaging mint oil nanoformulation.</li> <li>To determine efficient and effective methodology for making nanoformulation.</li> <li>To evaluate the effectiveness of mint oil nanoformulation against <i>Rhyzopertha dominica</i>, <i>Cryptolestes ferrugineus</i> and <i>Oryzaephilus mercator</i>.</li> </ol>	Scientific community, government, local community	Mint oil nanoformulation as an alternative controlling agent for insect pest management in warehouses.	GOI-DJPA	Nanotechnology Laboratory, Center for Post-harvest Agricultural Research and Development, in Cimanggu Bogor ( <i>Laboratorium Nanoteknologi, Balai Besar Pasca Panen, Cimanggu, Bogor</i> )

17	Potential Fermentor to Inhibit <i>Aspergillus flavus</i> in Producing Aflatoxin B1 To Increase Cocoa Beans Quality	Nijma Nurfadila, SSI	<p>1. To select potential fermentor to increase cocoa beans quality using combination between two kinds of yeasts, acetic acid bacteria and mangosteen grind extract as basic materials.</p> <p>2. To analyze the effect of different fermentor combination on total reduced sugar, total ethanol, total titrated acid, yeast, acetic acid bacteria and <i>A. flavus</i> populations, and aflatoxin B1 content in cocoa beans.</p> <p>3. To choose the best fermentor combination for cocoa beans fermentation.</p>	Scientific community, local government, local community	Appropriate fermentors combination for cocoa beans that can support effective and efficient cocoa beans fermentation and can inhibit aflatoxin B1 (AFB1) producing fungi, especially toxigenic <i>A. flavus</i> without changing the cocoa beans aroma and taste.	GOI-DIPA	Indonesian Industry and Freshener Crops Research Institute, in Sukabumi ( <i>Balai Penelitian Tanaman Industri dan Penyegar (BALITTRI), Kabupaten Sukabumi</i> )
18	Restoration of Post Mining Soil by using Signal Grass ( <i>Brachiaria decumbens</i> ) through the Utilization of Multi Strains <i>Arbuscular Mycorrhiza</i> and <i>Azospirillum</i>	Risa Rosita, SSI	<p>1. To evaluate the effectiveness of multi strains arbuscular mycorrhiza (<i>Glomus fasciculatum</i>, <i>Glomus etinuatum</i>, <i>Acaulospora</i> and <i>Azospirillum</i>) in increasing growth and nutrient content of signal grass (<i>Brachiaria decumbens</i>) to restore post mining soil.</p> <p>2. To evaluate the effectiveness of signal grass (<i>Brachiaria decumbens</i>) in reducing heavy metal content at post mining soil.</p>	Scientific community, local government, local community	<p>1. Recommendation for using signal grass (<i>Brachiaria decumbens</i>) that had been inoculated by <i>Glomus fasciculatum</i>, <i>Glomus etinuatum</i>, <i>Acaulospora</i>, and <i>Azospirillum</i> sp. as phytoremediation agent for post mining land.</p> <p>2. Additional information on soil beneficial microbes to develop Sillvopastura system in Indonesia</p>	GOI-DIPA	Laboratory of Soil and Environmental Biotechnology (BTL), Institut Pertanian Bogor (IPB-Bogor Agricultural University), Forest Microbiology Laboratory of the Ministry of Environment and Forestry (KLHK)
19	Detection of Aflatoxigenic Potency of 8 <i>A. flavus</i> Isolates from 4 Food Commodities in Indonesia using Multiplex PCR	Anidah, SSI	To develop a fast and accurate detection method for aflatoxigenic potentials of eight <i>A. flavus</i> isolates from 4 food commodities in Indonesia	Scientific community, government institutions	A fast and accurate detection method for aflatoxigenic potentials of <i>A. flavus</i> isolates from Indonesia.	GOI-DIPA	None

20	GIS Development and Application of Agriculture Land Valuation Model: A Vulnerability Analysis Approach	Slamet Widodo Sugiarto, SSi	<ol style="list-style-type: none"> <li>1. To provide time series imagery data processing approach for identifying agricultural land units.</li> <li>2. To identify vulnerability parameters affecting the existence of agricultural land using spatial based Analytical Hierarchy Process (AHP).</li> <li>3. To develop spatial model in providing agricultural land value map.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>1. Method for analyzing multi-temporal imagery for identifying agricultural land units.</li> <li>2. Agricultural land valuation models that can run as geo-processing services (online platforms) to automatically produce land valuation maps.</li> </ol>	GOI-DIPA	Geospatial Information Agency ( <i>Badan Informasi Geospasial</i> )
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## Completed Research Projects from PhD Thesis Support Grantees

No	Title of Research Projects	Researcher/s	Objective(s)	Target Beneficiaries	Output and Impacts Produced	Funding Sources	Partners
1	Anoa, Dwarf Buffalo from Sulawesi: Genetic Approach using Mitochondrial DNA and Genotyping Techniques to Support Anoa Conservation Management	Dr Dwi Sendi Priyono	<ol style="list-style-type: none"> <li>To accurately explain anoa taxonomic status using mitochondrial DNA markers based on cytochrome b oxidase (Cyt B) genes, cytochrome oxidase subunit I (COI) genes and D-Loop fragments.</li> <li>To describe phylogenetic relationship, haplotype and anoa evolutionary history in captivity using mitochondrial DNA markers based on cytochrome b oxidase (Cyt B) genes, cytochrome oxidase subunit I (COI) and D-Loop genes.</li> <li>To provide anoa genetic diversity information based on microsatellite locus approach.</li> <li>To describe suitable genotyping method and microsatellite locus for determining anoa genetic diversity.</li> <li>To provide information on inbreeding rates occurring in individual anoa.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>Status and genetic information on anoa, including genetic distance, time of anoa diversification based on calibration analysis on genetic anoa evolution process, haplotype information, genetic diversity information, more accurate genotyping methods, and effective microsatellite loci in diagnosis of anoa genetic diversity.</li> <li>Integrated conservation guide for supporting conservation management.</li> </ol>	GO-DIPA	Anoa Breeding Center- Manado, Bontomarano Education Park Gowa, Taman Safari Indonesia-Cisarua, Laboratory of Molecular Biology of Research Center for Bioresources and Biotechnology, Institut Pertanian Bogor (IPB-Bogor Agricultural University), PT Genetika Science, Jakarta



### Completed Research Projects from School Garden Teacher

No	Title of Research Projects	Researcher/s	Objective(s)	Target Beneficiaries	Output and Impacts Produced	Funding Sources	Partners
1.	Implementation of "Nutrition for Achievement" Program: School Garden as A Nutrition Source and Media for Learning Entrepreneurship	Ratna Juwita Ghazali, SSi	<ol style="list-style-type: none"> <li>To describe implementation of "Nutrition for Achievement" Program: My School Garden" as nutrition source and media for learning entrepreneurship skill in SD Bhayangkara Yogyakarta.</li> <li>To identify plants as food source for improving students' nutrition.</li> <li>To get students to eat nutritious, diverse and balanced foods.</li> <li>To increase students' health quality in SD Bhayangkara Yogyakarta.</li> <li>To train students in entrepreneurship skills by cultivating and selling edible plants.</li> <li>To share knowledge with parents on the importance of nutritious, diverse and balanced diet for students.</li> </ol>	Scientific community, government institutions, private enterprises	<ol style="list-style-type: none"> <li>Optimal implementation of "Nutrition for Achievement Program: "My School Garden" as a nutritional source and media for learning entrepreneurship skill in SD Bhayangkara Yogyakarta.</li> <li>Increased students' health quality.</li> <li>Students having entrepreneurship skills.</li> </ol>	GOI-DJPA	None

2. Students' Intention to Increase Nutrition Requirements and Solve Food Security Problems through "One People One Hydroponic" Program	Solihin, SPd	<ol style="list-style-type: none"> <li>1. To determine influence of knowledge on hydroponics to students' willingness for developing their own hydroponic.</li> <li>2. To make proposals on measuring students' intention for developing hydroponic as the basis for hydroponic teaching program.</li> <li>3. To develop students' enthusiasims in planting nutritious edible plants as the basis for hydroponic.</li> </ol>	Scientific community, government institutions, local community	<ol style="list-style-type: none"> <li>1. Database on students' willingness for developing their own hydroponic.</li> <li>2. Proposals on hydroponic teaching program.</li> <li>3. Publications in national and international scientific journals.</li> </ol>	GOI-DIPA	None
3. School Garden Management Based on Students' Participation to Elevate Inquisitiveness and Entrepreneurial Skills	Fera Maulidya Sukarno, MPd	<ol style="list-style-type: none"> <li>1. To utilize school's available spaces for establishing school garden for improving students' literacy skill, increase students' nutritional status, develop students' entrepreneurship and collaborative skill, to sharpen students' inquisitiveness skill.</li> <li>2. To create a well-managed sustainable school garden program, based on students' participation.</li> <li>3. To develop students' interest on agriculture and balanced diet.</li> </ol>	Scientific community, government institutions, private enterprises and local community	<ol style="list-style-type: none"> <li>1. A well-managed and sustainable school garden program, based on students' participation, as a model for other school gardens in Subang Regency.</li> <li>2. Improved students' literacy skill, increased students' nutritional status, developed students' entrepreneurship and collaborative skill, sharpened students' inquisitiveness skill.</li> </ol>	GOI-DIPA	None
4. The Use of Aquaponic System to Produce Black Rice and Catfish	Ari Setyowati, MP	<ol style="list-style-type: none"> <li>1. To produce alternative technologies for growing rice while maintaining fish using aquaponics system.</li> <li>2. To provide facilities for rice cultivation practices.</li> <li>3. To enhance students' knowledge on urban agriculture</li> </ol>	Scientific community, government institutions, local community	<ol style="list-style-type: none"> <li>1. Students that are competent in rice and fish cultivation using aquaponics system.</li> <li>2. Compiled standard operating procedures for cultivating black rice and catfish using aquaponics system.</li> </ol>	GOI-DIPA	None

5. Implementing Aquaponic System to Enhance Students' Literacy, Nutrition, and Entrepreneurship Skills	Dwi Setyaningsih, MPd, MSc	<p>1. To promote aquaponics system as means for encouraging students' consumption on vegetables, fruits and fish, while developing students' environmental awareness.</p> <p>2. To enhance students knowledge on nutrition and health.</p> <p>3. To develop students entrepreneurship skill through agribusiness practices on aquaponics products.</p> <p>4. To sharpen the impact of aquaponics implementation for enhancing students' literacy, nutrition and entrepreneurship skills.</p>	Scientific community, government institutions, private enterprises and local community	<p>1. Existing aquaponics media to support students learning processes.</p> <p>2. Diversified nutritious food consisted of vegetables and fish.</p> <p>3. Large quantity of vegetables and fish products, produced in a limited school area.</p> <p>4. Organic vegetables and fish, which do not contain the most common pathogen and chemical substance.</p>	GOI-DJPA	None
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**APPENDIX 2.**  
**Training Courses, Workshops, Group Discussions, Seminars and Meetings Conducted during FY 2019/2020**

**A. National Training, Seminar, Workshop**

No.	Activities	Objectives	Date and Venue	Source of Fund	Types and number of participants			Collaborating Agency	Participant's Country
					F	M	Total		
1	Training of Trainers on Mapping and Natural Disaster Mitigation through Spatial Planning on Coastal Areas	To enhance participants' skills in developing learning materials in accordance with the Indonesian Education Curriculum, involving Characters Strengthening Education (PPK), Literation, Creative, Critical Thinking, Communicative, and Collaborative Skills (4C), and Higher Order Thinking Skills (HOTS)	Universitas Tadulako, Palu, Central Sulawesi, 29 July - 2 August 2019	Gol DIPA	23	7	30	Faculty of Agriculture, Universitas Tadulako, Palu, Central Sulawesi	Indonesia
2	National Conference on Silviculture	To gain and promote ideas, as well as opinions about research outputs on silviculture practices between academics and communities.	Medan, North Sumatra, 2 - 3 August 2019	Gol DIPA	94	104	198	Faculty of Forestry, Universitas Sumatera Utara, (USU), Medan, North Sumatra	Indonesia
3	Training of Trainers on Applications of Acoustic Technology for Studying Underwater Objects as well as for Inventorying and Conserving Marine Biota	To provide theoretical and practical knowledge and skills to the participants on the use and operation of marine acoustics instruments for the collection and analysis of fish, zooplankton, coral reef, seagrass, seabed data, suspended sediment, ocean current, and to some extent for mapping archaeological resources	SEAMEO BIOTROP, Bogor, 5 - 9 August 2019	Gol DIPA	21	4	25		Indonesia
4	Training of Trainers on Identification of Mycotoxigenic Fungi	To provide knowledge on characteristics of mycotoxins and to enhance participants' skills in identifying mycotoxigenic fungi in food, morphologically and molecularly	SEAMEO BIOTROP, Bogor, 3 - 6 September 2019	Gol DIPA	20	7	27		Indonesia
5	The 3 <sup>rd</sup> Quarterly Public Seminar Series on "Mycotoxins in Fermented Food"	To share knowledge and experiences on Mycotoxins in Fermented Food, among practitioners and scientists in national, regional and international scales.	SEAMEO BIOTROP, Bogor, 5 September 2019	Gol DIPA	39	14	53		Indonesia

6	Training of Trainers on Developing Intensive Fruits Farming and Fruit-Based Products	<ol style="list-style-type: none"> <li>To enhance the competence of vocational and high schools' teachers in developing healthy, productive, efficient, competitive and sustainable fruit farm.</li> <li>To enhance the teachers' skills in producing fruit-based products.</li> <li>To develop connections, networks and resource sharing among teachers.</li> </ol>	SEAMEO BIOTROP, Bogor, 7 - 11 October 2019	Gol DIPA	18	14	32	Indonesia
7	Training of Trainers on Optimizing Spatial Technology for Fruit Plants Monitoring – A SMARTS-BE Program	<ol style="list-style-type: none"> <li>To develop geodatabase network among schools in implementing SMARTS-BE Program.</li> <li>To implement precision agriculture technology in supporting the development of monitoring, reporting and evaluation system (MRE) based on spatial and 4.0 technologies.</li> <li>To integrate growth pattern of fruit plants and autonomy education system in mapping regional and local fruit resources potency</li> </ol>	SEAMEO BIOTROP, Bogor, 14 - 18 October 2019	Gol DIPA	9	21	30	Indonesia
8	The 4 <sup>th</sup> Quarterly Public Seminar Series on "Digital Technology, Autonomy System and Artificial Intelligence for Utilization of Marine Biological Resources"	To share knowledge and experiences on Digital Technology, Autonomy System and Artificial Intelligence for Utilization of Marine Biological Resources among practitioners and scientists in national, regional and international scales.	SEAMEO BIOTROP, Bogor, 21 November 2019	Gol DIPA	26	18	44	Indonesia
9	Workshop on Strategy for Strengthening Fisheries Resources and Coastal Area	To formulate strategy for developing and strengthening fisheries resources and coastal area.	SEAMEO BIOTROP, Bogor, 4 December 2019	Gol DIPA	21	20	41	Indonesia
10	Online Training on Urban Agriculture	<ol style="list-style-type: none"> <li>To enhance participants' awareness and understanding on urban agriculture concepts.</li> <li>To share knowledge on various and adaptable urban agriculture technologies.</li> <li>To provide opportunities for practice and developing innovative projects to participants.</li> </ol>	SEAMEO BIOTROP, Bogor, December 2019 - February 2020	Gol DIPA	4	10	14	SEAMEO Secretariat Indonesia

11	FGD Utilization of School Garden Program to Support Science, Technology, Engineering and Mathematics (STEM) Learning Programs	1. To enhance knowledge and understanding on school garden concepts. 2. To share experience on school garden implementation. 3. To review and identify the topics for the upcoming STEM workshop on school garden.	SEAMEO BIOTROP Bogor, 19 – 20 February 2020	Gol DIPA	7	5	12
12	Modern Farming Talkshow	To share knowledge on SEAMEO BIOTROP best innovations that have been implemented by schools and community.	SEAMEO BIOTROP, Bogor, 26 - 27 February 2020	Gol DIPA	88	48	136
13	Online Training on Fishery Agribusiness: Creative Camp for Vocational School Teachers in 2020	To share knowledge on fisheries cultivation for vocational school teachers in Indonesia.	21 April - 14 May 2020	Gol DIPA	135	133	268
14	Online Seminar on Post-Mining Land Reclamation	1. To enhance participants' awareness and understanding on urban agriculture concepts. 2. To share knowledge on various and adaptable urban agriculture technologies.	6 May 2020	Gol DIPA	44	56	100
15	Sharing Session I Knowledge Sharing Series 'Management of Small Tropical Islands: The Potential of Relative Resilience of Coral Reefs Socio-Ecological Aspects in Wakatobi as the Basis for Sustainable Management'	To share knowledge on management of small tropical islands in Indonesia based on research and scientific publications.	6 May 2020	Gol DIPA	13	20	33
16	Online Seminar on Urban Farming Part 1: Understanding Urban Farming	1. To enhance participants' awareness and understanding on urban agriculture concepts. 2. To share knowledge on various and adaptable urban agriculture technologies.	8 May 2020	Gol DIPA	11	14	25
17	Knowledge Sharing Series II: Management of Small Tropical Islands	To share knowledge on management of small tropical islands in Indonesia based on research and scientific publications.	13 May 2020	Gol DIPA	45	55	100
18	Online Seminar on Urban Farming Part 2: Mushroom Cultivation as Food Source	To share knowledge on various and adaptable urban agriculture technologies (mushroom cultivation) in SEAMEO BIOTROP.	14 May 2020	Gol DIPA	18	15	33
							Agathis IPB

19	Sharing Session III Knowledge Sharing Series ‘Management of Small Tropical Islands: Ecosystem Approach in Managing Small Scale Fisheries in Indonesia’	To share knowledge on management of small tropical islands in Indonesia based on research and scientific publications.	20 May 2020	40	45	85		
20	Online Training on Urban Agriculture Application in Supporting Food Security	<ol style="list-style-type: none"> <li>To improve the participants’ understanding and awareness on urban farming basic concepts.</li> <li>To share implemented technology of urban farming based on the current condition.</li> <li>To support food security.</li> <li>To provide opportunities for participants in practicing and developing innovative projects on urban farming.</li> </ol>	May - June 2020	Gol DIPA	119	81	200	
21	Good Practices for Implementing QMS in accordance with ISO 9001:2015	To share knowledge on ISO 9001:2015 implementation in SEAMEO BIOTROP, as an ISO implementation model for other SEAMEO Centres in Indonesia.	20 May 2020	Gol DIPA	26	22	48	SEAMEO Centres Indonesia
22	Essential Oils Utilization in Handling Covid-19	To share knowledge on essential oil utilization in handling Covid-19	20 May 2020	Gol DIPA	64	36	100	Indonesian Essential Council and the Indonesian Agency for Agricultural Research and Development ( <i>Dewan Atsiri Indonesia dan Badan Penelitian dan Pengembangan Pertanian</i> )
23	Online Seminar on Urban Farming Part 3: Hydroponic Technique	To enhance participants’ awareness and understanding on hydroponics	11 June 2020	Gol DIPA	19	29	48	
24	MasSi Talks Series I: Increased Productivity of Forests and Degraded Land in Indonesia	To share knowledge and experiences on forest production development and degraded land in Indonesia	12 June 2020		279	236	515	
25	MasSi Talks Series II: Community Forest Development as a Covid-19 Disaster Mitigation Effort	To share knowledge and experiences on community forest	22 June 2020		115	130	245	

26	The 1 <sup>st</sup> Quarterly Online Public Seminar: The Urgent Study of Mapping and Analysis of Peatlands in Indonesia Using Active and Passive Satellite Imagery in Support of Low Carbon Development	To share knowledge and experiences on peatland mapping	29 June 2020	Gol DIPA	30	70	100
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## B. International Conference

No.	Activities	Objectives	Date and Venue	Source of Fund	Types and number of participants			Collaborating Agency	Participant's Country
					F	M	Total		
1	The 2019 International Conference on Mining and Environmental Technology (ICMET)	<ol style="list-style-type: none"> <li>To gain and promote ideas on beneficial mining processes while achieving sustainable development goals (SDG) by implementing good mining practices.</li> <li>To develop collaborations and network among stakeholders in regards to mining processes and sustainability of environment surrounding mining areas.</li> </ol>	Mataram, Lombok, 15 - 16 July 2019	Gol DIPA	32	83	115	LPPM Muhammadiyah; Universitas Mataram	
2	SCESAP International Symposium: Coastal Ecosystem and Biodiversity of Asia-Pacific in Achieving SDG 14	<ol style="list-style-type: none"> <li>To gain and promote ideas on coastal system and biodiversity of Asia - Pacific in achieving the 14<sup>th</sup> sustainable development goals (SDG).</li> <li>To develop collaborations and network among stakeholders in regards to coastal ecosystem and biodiversity of Asia-Pacific.</li> </ol>	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 12 - 16 August 2019	Gol DIPA	51	81	132	Faculty of Fisheries and Marine Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	



3	The 2 <sup>nd</sup> International Conference on Tropical Silviculture: Forest Research and Innovation for Sustainable Development	<p>1. To disseminate research outputs and innovations on tropical silviculture for forest sustainable development.</p> <p>2. To strengthen and enhance the role of Indonesian silviculturists in research development, innovations and forest management in Indonesia.</p>	IPB International Convention Center, Bogor, 10 - 11 September 2019	Gol DIPA	66	67	133	Faculty of Forestry, Institut Pertanian Bogor (IPB-Bogor Agricultural University)
4	The 2 <sup>nd</sup> International Conference on Environment and Forest Conservation (ICEFC 2019)	To globally share innovative and interdisciplinary paradigms by communicating research results on forestry and environment as well as by promoting sustainable environment for humanity.	IPB International Convention Center, Bogor, 1 - 3 October 2019	Gol DIPA	69	87	156	Faculty of Forestry, Institut Pertanian Bogor (IPB-Bogor Agricultural University)

### C. In-country, Regional and International Training

No.	Activities	Objectives	Date and Venue	Source of Fund	Types and number of participants			Collaborating Agency	Participant's Country
					F	M	Total		
1	Training Course on Urban Agriculture for Special Education Teachers	<ol style="list-style-type: none"> <li>To enhance the competence of vocational and high schools teachers in developing healthy, productive, efficient, competitive and sustainable fruit farm</li> <li>To enhance teachers skills in producing fruit-based products.</li> <li>To develop connections, networks and resource sharing among teachers.</li> </ol>	P4TK, Bandung, 30 September – 3 October 2019	Gol DIPA	40	21	61	SEAMEO Centres in Indonesia	Indonesia
2	In-Country Training on School Garden for Improving Students' Literacy, Nutrition and Entrepreneurship	<ol style="list-style-type: none"> <li>To share knowledge and understanding about the importance of school garden program, so that the participants are enthusiastic in implementing school garden program in their respective institutions.</li> <li>To assess schools status in regards to learning activities, nutrition and entrepreneurship.</li> <li>To enhance the participants' competence in internalizing the importance of consuming nutritious food as an effort to elevate students' competence in education.</li> </ol>	Royal University of Phnom Penh, Cambodia, 10 - 13 October 2019	Gol DIPA SEDF	12	18	30	Royal University of Phnom Penh	Cambodia
3	Webinar "Kebun Sekolah untuk Mendukung STEM dan Membangun Karakter Peserta Didik"	<ol style="list-style-type: none"> <li>To enhance understanding and knowledge of fundamentals on urban farming;</li> <li>To share knowledge on some urban farming technology which is possible to be implemented in urban areas;</li> <li>To give opportunities for participant to practice and develop innovative projects</li> </ol>	26 June 2020		18	15	33	Sekolah Indonesia Bangkok (SIB)	

### APPENDIX 3.

## List of Memorandum of Understanding (MoU)/Memorandum of Agreement (MoA) and Contracts Signed in FY 2019/2020

### A. On-Going Memorandum of Understanding/Memorandum of Agreement and Contracts

No.	Organization/Agency	Date Signed	Subject of Cooperation	Duration
1	SMK Negeri 1 NISAM	1 July 2019	Improving the Quality of Vocational Education	2 Years
2	Perkumpulan Petani Vanili Indonesia (PPVI)	3 July 2019	Producing Vanilla Quality Seeds	2 Years
3	SMK PP Negeri Samarinda	4 July 2019	Improving the Quality of Vocational Education	2 Years
4	Haji Maming Batulicin, PT	15 July 2019	Providing Consultancy on Developing Tissue Culture Technique for Producing Seaweed Quality Seeds and Building Tissue Culture Laboratory	2 Years
5	SMK Negeri 3 Pandeglang	17 July 2019	Improving the Quality of Vocational Education	2 Years
6	SMK Negeri 1 Sigi	17 July 2019	Improving the Quality of Vocational Education	2 Years
7	Kasongan Bumi Kencana, PT	22 July 2019	Developing Swampy Forest in Tailing Storage Facility	18 Months
	SMK Unggul Negeri 2 Banyuasin 2	5 September 2019	Improving the Quality of Vocational Education	2 Years
9	SMK Pertanian Negeri 2 Tugumulyo	5 September 2019	Improving the Quality of Vocational Education	2 Years
10	SMK Proklamasi	5 September 2019	Improving the Quality of Vocational Education	2 Years
11	SMK Negeri 1 Sungai Rotan	5 September 2019	Improving the Quality of Vocational Education	2 Years
12	SMK Negeri 1 Rambutan	5 September 2019	Improving the Quality of Vocational Education	2 Years
13	SMK Negeri 4 Baturaja	5 September 2019	Improving the Quality of Vocational Education	2 Years
14	SMK Negeri 1 Tungkal Ilir	5 September 2019	Improving the Quality of Vocational Education	2 Years
15	SMK Negeri 1 Tanjung Batu	5 September 2019	Improving the Quality of Vocational Education	2 Years
16	SMK Negeri 1 Muara Telang	5 September 2019	Improving the Quality of Vocational Education	2 Years
17	SMK Negeri 1 Semende Darat Laut	5 September 2019	Improving the Quality of Vocational Education	2 Years
18	SMK Negeri 1 Tanjung Lago	5 September 2019	Improving the Quality of Vocational Education	2 Years
19	SMK Negeri 1 Lalan	5 September 2019	Improving the Quality of Vocational Education	2 Years
20	SMK Negeri 1 Jarai	5 September 2019	Improving the Quality of Vocational Education	2 Years
21	SMK Negeri 1 Babat Supat	5 September 2019	Improving the Quality of Vocational Education	2 Years
22	Arah Environmental Indonesia, PT	9 September 2019	Managing Toxic and Hazardous Medical Waste	1 Year
23	SMK Negeri 4 Garut	9 September 2019	Elevating the Potency of Teachers, Students and Alumni	3 Years
24	Universitas Satya Negara Indonesia	13 September 2019	Implementing Internship Programs for University's Students	2 Years
25	Pusat Pendidikan Pertanian Badan Penyuluhan dan Pengembangan SDM Pertanian	16 September 2019	Developing Human Resources Capacity on GIS to Support Precision Agriculture Program	5 Years
26	SMK PP Negeri Bireun	17 September 2019	Elevating the Potency of Teachers, Students and Alumni	3 Years
27	SMK Negeri 2 Loli	19 September 2019	Elevating the Potency of Teachers, Students and Alumni	3 Years
28	SMKN 1 Kotawaringin Lama	21 September 2019	Improving the Quality of Vocational Education	3 Years
29	Yayasan Berdikari (Kampung IPB, Institut Pertanian Bogor-IPB-Bogor Agricultural University)	24 September 2019	Developing Collaborations in Education, Research and Community Development	5 Years
30	Universitas Syiah Kuala	1 October 2019	Developing Collaborations in Education, Research and Community Development	3 Years

31	Universitas Sultan Ageng Tirtayasa	31 October 2019	Developing Collaborations in Education, Research and Community Development	3 Years
32	Universitas Syiah Kuala	4 November 2019	Implementing University's Student Internship to Japan	2 Years
33	Universitas Sahid	11 November 2019	Staff Exchange: Research and Internship Programs and Collaborative Projects in Areas of Mutual Interest	3 Years
34	Pusat Pendidikan Pertanian, Badan Penyuluhan dan Pengembangan SDM Pertanian	14 November 2019	Developing Human Resources Capacity on Tissue Culture to Support Sustainable Agriculture Program	3 Years
35	SMK Muhammadiyah 1 Leuwidamar	2 December 2019	Elevating the Potency of Teachers, Students and Alumni	3 Years
36	Yayasan LAZ AL-BUNYAN	4 December 2019	MoU and MoA on Collaborations in Educations, Laboratorium Analyses and Community Development	3 Years
37	Universitas Sahid	5 December 2019	Implementing University's Student Internship to Japan	2 Years
38	Pemerintah Kota Bogor	26 February 2020	Developing Socio Economy Aspects to Support Bogor City's Green City Program	2 Years
39	YKAN/TNC	26 February 2020	Implementing Research Collaborations on Conserving and Sustainably Utilizing Coastal and Marine Resources in Indonesia	2 Years
40	Dinas Koperasi dan UKM Kota Padang	26 February 2020	Elevating Capacity and Competence of Small- and Micro-scale Enterprises within the Office of Cooperatives of Padang City	3 Years
41	PKHT IPB	26 February 2020	Developing Collaborations in Research, Innovations, Promotion and Agro Eco Edu Tourism	3 Years
42	HA IPB	26 February 2020	Developing Collaborations in Providing Reliable Researchers, Consultants and Instructors; Elevating Community Empowerment in Utilizing Tropical Biology Resources; as well as Implementing Internship Program for Fresh Graduates and Alumni of IPB University	3 Years
43	Maligi Permata Industrial Estate, PT	26 February 2020	Developing Green Industrial City, Community Learning Park and Science Technology Engineering and Mathematics Park in Karawang Regency	3 Years
44	MSC Co., Ltd	4 March 2020	Collaboration on Developing Seaweed Propagation using Tissue Culture Technique	3 Years

## B. Completed Memorandum of Understanding/Memorandum of Agreement and Contracts

No.	Organization/Agency	Date Signed	Subject of Cooperation	Duration
1	New Future Management Centre	16 July 2019	Developing Collaborations in Training Courses on Drone Utilization for Quick and Accurate Disaster Mitigation	16 July 2019

## APPENDIX 4.

### List of Post and Undergraduate Students Who Conducted Researches, Internships and On The-Job Trainings at SEAMEO BIOTROP during FY 2019/2020

#### A. Research

No.	Name	Institution and Level	Research Title	Unit Affiliated	Supervisor
1	Muhammad Rifa'i	Universitas Ibnu Chaldun Jakarta, Faculty of Agriculture (S1)	Attack Level Analysis of Rice Storage Pest <i>Tribolium castaneum</i>	Entomology Laboratory	Sri Widayanti, MSi.
2	Sofari Waruru	Universitas Ibnu Chaldun Jakarta, Faculty of Agriculture (S1)	Damage Level of Rice Grain in Post Harvest Storage Caused by <i>Sitophilus</i>	Entomology Laboratory	Sri Widayanti, MSi.
3	Pipin Saputra	Universitas Ibnu Chaldun Jakarta, Faculty of Agriculture (S1)	Study of Development and Growth of <i>Rhyzopertha dominica</i> in Wheat	Entomology Laboratory	Sri Widayanti, MSi.
4	Ayu Indah Lestari	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, West Java, Faculty of Forestry (S1)	HMGR Gene Expression of Inoculated and Non-inoculated <i>Aquilaria fillaria</i>	Biotechnology Laboratory	Dewi Rahmawati, MSi.
5	Buma Larosa	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, West Java, Faculty of Forestry (S1)	Guaiene Gene Expression of Inoculated and Non-inoculated <i>Aquilaria fillaria</i>	Biotechnology Laboratory	Dewi Rahmawati, MSi.
6	Kay Khine Myint	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, West Java, Faculty of Agriculture (S2)	Biological Activities and Chemical Composition of <i>Syzygium aromaticum</i> Essential Oils Fractions Against Cowpea Weevil, <i>Callosobruchus maculatus</i> (Coleoptera: Bruchidae)	Entomology Laboratory	Dr Idham Sakti Harahap
7	Alif Khalifaf Kardinan	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, West Java, Faculty of Agriculture (S2)	Utilization of Essential Oils Derived from <i>Cytrus hystrix</i> as Vegetable Fumigant and Insecticide Against Storage Pest <i>Ephestia cawtella</i> (Walker) (Lepidoptera: Pyralidae)	Entomology Laboratory	Dr Idham Sakti Harahap
8	Jejen Jaenudin	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of Cocunut Water and Tofu Wastewater toward Oyster Mushroom ( <i>Volvariella volvaceae</i> ) Growth and Production	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
9	Efri Sanjaya	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effectivity of Cow Urine Application and Its Electrical Conductivity toward Kailan ( <i>Brassica oleracea</i> ) Growth using Floating Raft System	Greenhouse C	Didi Junaedi, AMD
10	Andre Sukma Wirawan	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of K Fertilizer and Coconut Water toward Pakcoy ( <i>Brassica rapa</i> L.) Growth, Production and Quality using Hydroponic Technique in Floating Raft System	Greenhouse C	Didi Junaedi, AMD

11	M. Azria Yuhada	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of Rice Water Application and Nutrition Concentration toward Growth and Production of Peanuts ( <i>Arachis hypogaea</i> L.)	BIOTROP's Planting Field	Didi Junaedi, AMd
12	Fakhri Luthfiansyah	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of Egg Shell Application and Nutrition Concentration toward Growth and Production of Peanuts ( <i>Arachis hypogaea</i> L.)	BIOTROP's Planting Field	Didi Junaedi, AMd

## B. Internship and On-the-Job Training

No.	Name	Institution and Level	Research Title	Unit Affiliated	Supervisor
1	Gede Andhi Punawan	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
2	Hamengku Ageng Sariuwit	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
3	Riska	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
4	Mardianti	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
5	Tirtha Sintiya Sumanti	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
6	Desy Asfira	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
7	Moh. Nur Sapriansah	Universitas Tadulako, Palu, Central Sulawesi, Faculty of Mathematics and Natural Sciences (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
8	Vincentius Surya Siedharta	Universitas Surabaya, East Java, Faculty of Technobiology (S1)	Optimizaton of Mutant Acacia Sterilization	Biotechnology Laboratory	Dewi Rahmawati, MSi
9	Putu Suardana	Universitas Surabaya, East Java, Faculty of Technobiology (S1)	Optimization of Aquilaria crassna Explant Sterilization	Biotechnology Laboratory	Dewi Rahmawati, MSi
10	Joshua Nathanael	Universitas Surabaya, East Java, Faculty of Technobiology (S1)	Optimization of Acacia Explant Sterilization	Biotechnology Laboratory	Dewi Rahmawati, MSi
11	Iwan Maulana	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani

12	Jastin Laris Andre S.	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Warehouse Pest Control	Entomology Laboratory	Sri Widayanti, MSi
13	Nurfachma Ilmana Dewi S.	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
14	Sepia Latipah	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
15	Siti Nur Alifah	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
16	Marwah Hidayani	Universitas Pakuan, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
17	Amida Dwi Safitri	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of Different Growing Media toward Kangkung Growth using NFT Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
18	Dian Anggraeni	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Effect of Different Growing Media toward Kangkung Growth using NFT Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
19	Erna Susanti	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
20	Jaenal Abidin	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
21	Refi I.	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
22	Siti Sri Sundari	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
23	Mellyn Putri Hargianto	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Producing Teak Seedlings ( <i>Tectona grandis</i> ) using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
24	Selawa Putri Arum	Universitas Djuanda, Bogor, West Java, Faculty of Agriculture (S1)	Producing Teak Seedlings ( <i>Tectona grandis</i> ) using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
25	Siti Tisas Sitra Sanana	Universitas Lampung, Lampung, Faculty of Agriculture (S1)	Response of Single Spore Culture toward Growth and Development of <i>Sorghum bicolor</i>	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
26	Isnaini Ulfah	Institut Teknologi Sumatera, Lampung, Department Infrastructure and Territorial Technology (S1)	Design of Ex-mining Land Utilization in PT Gunung Bayan Pratama Coal	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
27	Indrianinda Nugraha	Institut Teknologi Sumatera, Lampung, Department Infrastructure and Territorial Technology (S1)	Design of Ex-mining Land Utilization in PT Gunung Bayan Pratama Coal	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi

28	Theodorus Olwyn Innation	Universitas Kristen Satya Wacana, Salatiga, Central Java, Faculty of Biology (S1)	Isolation and Identification of Fungi Obtained from Red Chili Leaves ( <i>Capsicum annum</i> L.)	Phytopathology Laboratory	Ir Ina Retnowati
29	Kamilia Baselli	Universitas Katolik Indonesia Atma Jaya, Jakarta, Faculty of Technobiology (S1)	Vesicular-Arbuscular Mycorrhiza Isolation from Rhizosphere of <i>Zanthoxylum rhetsa</i> (Roxb) D.C.	Biosystem and Landscape Management Laboratory	Risa Rosita, SSi
30	Maynanda Ashar	Universitas Katolik Indonesia Atma Jaya, Jakarta, Faculty of Technobiology (S1)	Vesicular-Arbuscular Mycorrhiza Isolation from Rhizosphere of <i>Pennisetum purpureum</i>	Biosystem and Landscape Management Laboratory	Risa Rosita, SSi
31	Ratna Komala Sari	Universitas Nusa Bangsa, Bogor, West Java, Faculty of Mathematics and Natural Sciences (S1)	Analysis of NH <sub>3</sub> and NO <sub>2</sub> Content in Ambient Air	Water and Air Laboratory	Budi Cahyadi, SSi
32	Yovita Bui Kali	Universitas Kristen Artha Wacana, Kupang, East Nusa Tenggara, Department of Aquatic Resources Management (S1)	Red Seaweed Propagation in PES Media using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
33	Maria K.I.Y Bone	Universitas Kristen Artha Wacana, Kupang, East Nusa Tenggara, Department of Aquatic Resources Management (S1)	Red Seaweed Propagation in PES Media using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
34	Rasti Nurmala Putri	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
35	Abdullah Habil	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
36	R. Muhammad Jamaludin Arafat	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
37	Ahmad Saepudin	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
38	Delia	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
39	Muhamad Pedi	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
40	Sahrul Gunawan	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
41	Siska Sumiyati	SMK Negeri 1 Cikalongkulon Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani



42	Asy Syaffa Amatur R.	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Plant Culture using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
43	Untari Ayuningtyas	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Plant Culture using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
44	Mohamad Alix Ababil	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Plant Culture using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
45	Siti Setya Wati	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
46	Eva Proditus Sianturi	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Characterization of Arbuscular Mycorrhizal Fungi (AMF) in the Rhizosphere of star fruit ( <i>Averrhoa carambola</i> L.)	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
47	Salifa Quratul Aini S.	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Identification of Rhizosphere Bacteria in Productive Soil and Sub-optimal Soil in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
48	Muhammad Irvan C.F.	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
49	Prismastya Yoesanangga	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
50	Qurrotul Ayun	Universitas Gunadarma, Faculty of Industrial Technology, Agrotechnology Study Program, Depok, West Java (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
51	Mufida Al Idrus	Universitas Tadulako, Palu, Central Sulawesi, Faculty Mathematics and Natural Sciences (S1)	Screening of Aflatoxin and Ochratoxin-Producing Fungi Isolates from Peanuts	Phytopathology Laboratory	Ir Ina Retnowati
52	Firdasari	Universitas Tadulako, Palu, Central Sulawesi, Faculty Mathematics and Natural Sciences (S1)	Screening of Aflatoxin and Ochratoxin-Producing Fungi Isolates from Corn	Phytopathology Laboratory	Ir Ina Retnowati
53	Feni Setia Ningrum	Universitas Tadulako, Palu, Central Sulawesi, Faculty Mathematics and Natural Sciences (S1)	Plant Culture using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
54	Eka Yanti	Universitas Tadulako, Palu, Central Sulawesi, Faculty Mathematics and Natural Sciences (S1)	Plant Culture using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani

55	S.T. Muliana	Universitas Tadulako, Palu, Central Sulawesi, Faculty Mathematics and Natural Sciences (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
56	Desi Kristina Sijabat	SMK Bhakti Insani Kota Bogor	Office Administration	CBD	Ulfah Zul Farisa, SHut
57	Melvy Adi Purnama	SMK Bhakti Insani Kota Bogor	Office Administration	FMD	Lastiah, SE
58	Putri Lestari	SMK Bhakti Insani Kota Bogor	Office Administration	HRMD	Yunita, SP
59	Dinaryanti Supriatna	SMK Bhakti Insani Kota Bogor	Office Administration	GAD	Lidia Defita, SKom
60	Yunita Kholipah	SMK Bhakti Insani Kota Bogor	Office Administration	ULP	Devi Septrianti, SE
61	Dewi Aryanti	SMK Bhakti Insani Kota Bogor	Office Administration	FAD	Supriyatno, AMd
62	Helga Giovani Idelia	SMK Wikrama Bogor	Creative Content for Social Media	KMD	Haritz Cahya Nugraha, MT
63	Calviano Natha Nael	AMIK Bogor (D3)	Developing and Improving Entomology Database	KMD	Haritz Cahya Nugraha, MT
64	Markus Ngongo Righuta, SP	SMKN 1 Kota Tambolaka, East Nusa Tenggara (Teacher)	Food Security	Hydroponic Greenhouse, Natural Product Laboratory, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Jonner Situmorang, MSi
65	Viktorius Boko, SP	SMKN 1 Kota Tambolaka, East Nusa Tenggara (Teacher)	Food Security	Hydroponic Greenhouse, Natural Product Laboratory, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Jonner Situmorang, MSi
66	Marah Halim, SP.	SMK PP Negeri Kutacane, Aceh (Teacher)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSi
67	Darmawan Syahputra	SMK PP Negeri Kutacane, Aceh	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSi
68	Mahyadi	SMK PP Negeri Kutacane, Aceh	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSi
69	Dedi Kurniawan	SMK PP Negeri Kutacane, Aceh	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSi
70	Zulkiram	SMK PP Negeri Bireuen, Aceh	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSi
71	Nur Annisah	SMK Negeri 3 Pandeglang, West Java	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
72	Gevira Mulyani	SMK Negeri 3 Pandeglang, West Java	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
73	Suzie Maulidia A.	SMK Negeri 3 Pandeglang, West Java	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
74	Indri Ardiyani	SMK Negeri 3 Pandeglang, West Java	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi

75	Arif Setiyadi	Universitas Diponegoro, Semarang, Central Java, Faculty of Animal and Agricultural Sciences	Technique for Inoculating and Identifying Arbuscular Mycorrhiza Fungi in Sorghum	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
76	Khairun Nisa Andini	SMK AK Nusa Bangsa, Bogor, School of Chemical Analysts	Proximate Analysis	Food and Feed Laboratory	Ratnaningsih, SSI
77	Veni Puspita Sari	SMK AK Nusa Bangsa, Bogor, School of Chemical Analysts	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
78	Fanny Cahyani Choirunisa	SMK AK Nusa Bangsa, Bogor, School of Chemical Analysts	Wastewater and Ambient Air Analysis	Water and Air Laboratory	Budi Cahyadi, SSI
79	Amatullah Nabila	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
80	Adinda Putri Agustin	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
81	Dina Marlina	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
82	Ibrahim Prasya Ramadhan	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
83	Muhammad Rafi Widianoro	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
84	Muhammad Ridwan	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd
85	Naufal Raisa Aqil	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI Rosadi, SPd and Sugih Mukti, AMd

86	Teuku Ahmad Maulana	SMP Ar-Ridha Al Salaam Depok, West Java	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSi Rosadi, SPd and Sugih Mukti, AMd
87	Caca Supriyatna	SMKN 2 Cilaku Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
88	Siti Alia Rahmatunisa	SMKN 2 Cilaku Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
89	Krisna Maulana	SMKN 2 Cilaku Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
90	Adila Basimah Yusfa	SMKN 2 Cilaku Cianjur	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
91	Sinta Nuraini Putri Nabila	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	PDS	Nopi Ramli
92	Sella Fatma	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	PDS	Nopi Ramli
93	Reni Mulyati	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	PDS	Nopi Ramli
94	Juliana Azzahra Sagita Cansa	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	CBD	Ulfah Zul Farisa, SHut
95	Maulidiya Nursya Dyah	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	GAD	Lidia Defita, SKom
96	Aas Sopiatal Akidah	SMK Amaliah 1 & 2 Ciawi Bogor	Office Administration	Koperasi	Riana Hartati, SSi
97	Lisya Dea Sabilla Putri	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
98	Triayana Dewi	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
99	Ira Hardiani	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
100	Taufik Falah	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
101	Aldi Sahidin	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
102	Alwi Hadad	SMK Muhammadiyah 3 Bandung	Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Dr Erina Sulistiani

103	Muhammad Renaldi Pajrin	SMK Wikrama Bogor	Creative Design and Multimedia Equipment Operator	KMD	Haritz Cahya Nugraha, MT
104	Bayu Arya Mandala	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
105	Galo Indrawati	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
106	Hendra	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
107	Nuraini	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
108	Rahmadani	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
109	Riga Rusman Syah	SMKN 1 Pangkalan Kuras Riau	Vegetables and Fruit Plants Culture using Hydroponic System, Plant Propagation using Tissue Culture Technique and Oyster Mushroom Culture and Processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
110	Adjie Ahmad Prasetyo	SMKN 1 Pangkalan Kuras Riau	Computer network technique	FMD	Lukman Haris, SSI
111	Latief Abin Abdillah	SMKN 1 Pangkalan Kuras Riau	Computer network technique	FMD	Lukman Haris, SSI
112	Sidiq Agus Kurniawan	SMKN 1 Pangkalan Kuras Riau	Computer network technique	FMD	Lukman Haris, SSI
113	Dzar Faiq Al Aqila	Sekolah Islam Bogor (SMP)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
114	Alvira Mukhtar	Entrepreneur	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
115	Marwah Kamilah	SMAK Bogor, School of Chemical Analysts	Wastewater and Ambient Air Analysis	Water and Air Laboratory	Budi Cahyadi, SSI
116	Ainira Azkarunisa	SMAK Bogor, School of Chemical Analysts	Wastewater and Ambient Air Analysis	Water and Air Laboratory	Budi Cahyadi, SSI

117	Naura Izdihar	SMAK Bogor, School of Chemical Analysts	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
118	Adjie Tunggul Wahono	SMAK Bogor, School of Chemical Analysts	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
119	Siti Mutiara Insani	SMAK Bogor, School of Chemical Analysts	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
120	Zia Ilmi Ristia	SMAK Bogor, School of Chemical Analysts	Proximate Analysis	Food and Feed Laboratory	Ratnaningsih, SSI
121	Fitrianingsih	SMK Wikrama Bogor	Office Administration	HRMD	Yunita, SP
122	Malida Nur Hamidah	SMK Wikrama Bogor	Office Administration	GAD	Lidia Defita, SKom
123	Raden Anita Nur Salsabila	SMK Wikrama Bogor	Office Administration	FMD	Lastiah, SE
124	Ratu Alisha	SMK Wikrama Bogor	Office Administration	ULP	Devi Septrianti, SE
125	Auva Inayatillah	SMK PP Negeri Saree Aceh	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
126	Nazilatul Magfirah	SMK PP Negeri Saree Aceh	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
127	Ikhwan Shodiq Syifaudin	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
128	Yulia Eka Nurjanah	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
129	Kintan Maulidya	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
130	Vilda Puji Dini Anita	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
131	Doani Anggi safira	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
132	Retno Ayu Yentiana	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
133	Dwi Wahyuni	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Increasing Food Quality using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
134	Rachmawati Fitriana	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Increasing Food Quality using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
135	Widyawati Atmaida Hadjar	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani

136	Maura Savika Amalia	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
137	Salsabila Lutfia Putri	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
138	Filza Hakimah Fajrianti	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
139	Endang Triyani Prihantari	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
140	Refika Permata Puri	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
141	Adzhia Mutiari Silmi	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Growth optimization in peanuts	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
142	Dyah Nita Novira	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Effectivity of using Mychorriza toward Soybean Growth	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
143	Diana Fitri	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
144	Jauza Ulya Zahra	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
145	Rosa Amalia Wahdani	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
146	Nova Aprilia Nur Salamah	Universitas Jenderal Soedirman, Faculty of Biology, Purwokerto, Central Java (S1)	Vegetables and Fruit Plants Culture using Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
147	Arya Rozali	SMK Sumpah Pemuda 2	Office Administration	PDS	Nopi Ramli
148	M. Ilham Zam Zam	SMK Sumpah Pemuda 2	Office Administration	PDS	Nopi Ramli
149	Dewi Herawati	SMK Sumpah Pemuda 2	Office Administration	KMD	Rima Febriana, SE, Ak
150	Angel Fitria	SMK Sumpah Pemuda 2	Office Administration	KMD	Rima Febriana, SE, Ak
151	Abdul Koyum	SMK Sumpah Pemuda 2	Office Administration	KMD	Rima Febriana, SE, Ak
152	Aditya A. Riyadi	SMK Sumpah Pemuda 2	Office Administration	Koperasi	Riana Hartati, SSI
153	Ajeng Watu Gilang	SMK YMA Megamendung	Office Administration	GAD	Lidia Defita, SKom
154	Syifa Adelin	SMK YMA Megamendung	Office Administration	FAD	Supriyatno, AMd
155	Tri Sutrismi	SMK YMA Megamendung	Office Administration	ULP	Devi Septriani, SE

156	Sonia Ardiyani Putri	SMK YMA Megamendung	Office Administration	CBD	Ulfah Zul Farisa, SHut
157	Sakti Oktaviani	Universitas Singaperbangsa Karawang, West Java, Faculty of Agriculture (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
158	Eka Saptiani	Universitas Singaperbangsa Karawang, West Java, Faculty of Agriculture (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
159	Aliffia Restu Dinika	Universitas Singaperbangsa Karawang, West Java, Faculty of Agriculture (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
160	Muhammad Rifay	Universitas Singaperbangsa Karawang, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
161	Gita Erina Apriyanti W	Universitas Singaperbangsa Karawang, West Java, Faculty of Agriculture (S1)	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
162	Lutfi Sukma Pratiwi	Universitas Ahmad Dahlan, Yogyakarta, Faculty Science and Applied Technology (S1)	Plant Tissue Culture Techniques	Biotechnology Laboratory	Dewi Rahmawati, MSi
163	Mega Sarwati	Universitas Ahmad Dahlan, Yogyakarta, Faculty Science and Applied Technology (S1)	Plant Tissue Culture Techniques	Biotechnology Laboratory	Dewi Rahmawati, MSi
164	Veronica Putri Astuti	Universitas Ahmad Dahlan, Yogyakarta, Faculty Science and Applied Technology (S1)	Observation on Mycorrhiza Genera	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
165	Gabriel Darius Palayukan	Universitas Gadjah Mada, Yogyakarta, Faculty of Agriculture (S1)	Waste Management and Analysis	Water and Air Laboratory	Budi Cahyadi, SSI
166	Sugih Pradipta	SMK Geo Informatika	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
167	Yuninda Salsabila	SMK Geo Informatika	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
168	Syahputra Alfikri	SMK Geo Informatika	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
169	Nisrina Nur Irbah	Universitas Andalas, Padang, West Sumatera, Faculty of Mathematics and Natural Sciences, Biology Department (S1)	Observation on Mycorrhiza Genera	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
170	Regita Cahyani	Universitas Andalas, Padang, West Sumatera, Faculty of Mathematics and Natural Sciences, Biology Department (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
171	Meilani	SMK Negeri 4 Bogor	Computer Network Technique	FMD	Lukman Haris, SSI
172	Putri Agustina	SMK Negeri 4 Bogor	Computer Network Technique	FMD	Lukman Haris, SSI
173	Ali Satria	SMK Swasta Bakti Agro Mandiri Riau	Office Administration	PDS	Nopi Ramli
174	Raju Saputra	SMK Swasta Bakti Agro Mandiri Riau	Essential Oils Extraction, Making Natural Perfume and Natural Soap Bar	Natural Product Laboratory	Jonner Situmorang, MSi
175	Mulyadi	SMK Swasta Bakti Agro Mandiri Riau	Essential Oils Extraction, Making Natural Perfume and Natural Soap Bar	Natural Product Laboratory	Jonner Situmorang, MSi



176	Mohammad Fikhri Rachmawan	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Chemical Analysis Study Program (D3)	Wastewater and Ambient Air Analysis	Water and Air Laboratory	Budi Cahyadi, SSI
178	Ivan Ferdiansyah Pramudya	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Chemical Analysis Study Program (D3)	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
179	Nurul Wahyuni Situmorang	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	System Development for Monitoring Temperature, Humidity and Light Intensity Inside Oyster Mushroom Cultivation House in SEAMEO BIOTROP	Laboratory of Mushroom Cultivation	Zulkarnaen Noor Syarif, SKom
180	Deta Prastika	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	System development for Monitoring Temperature, Humidity and Light Intensity Inside Oyster Mushroom Cultivation House in SEAMEO BIOTROP	Laboratory of Mushroom Cultivation	Zulkarnaen Noor Syarif, SKom
181	Maulana Ikhsan Kamil	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	Microcontroller-based Plant Care Automation in Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
182	Muhammad Rafid Budiarto	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	Microcontroller-based Plant Care Automation in Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
183	Ahmad Jauhar Novian	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	Microcontroller-based Plant Care Automation in Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
184	Farhan Firdaus	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Computer Technology Study Program (D3)	Microcontroller-based Plant Care Automation in Hydroponic System	Hydroponic Greenhouse	Riana Hartati, SSI
185	Ilham A. Mahendra	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Essential Oils Distillation Technique	Natural Product Laboratory	Jonner Situmorang, MSi
186	Andrea Ajeng K	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPI
187	Rifqi Adam	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPI

188	Yus Septiawati	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPi
189	Siti Kholifah	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPi
190	Afra Nurul Azizah	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPi
191	Siska Purnamasari	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (S1)	Vegetables and Fruit Plants Culture using Aquaponic System	Aquatic Laboratory	Shella Marlinda, MPi
192	Ajeng Syifa Hananta S	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Accounting Study Program (D3)	Analysis of Bankruptcy Prediction using the Altman Z Score Method at Koperasi KIETA SEAMEO BIOTROP	Koperasi	Rima Febriana, SE, Ak
193	Dwina Lutfita Rizaldi	School of Vocational Studies, Institut Pertanian Bogor (IPB-Bogor Agricultural University), Accounting Study Program (D3)	Control System for Member Loan at Koperasi KIETA SEAMEO BIOTROP	Koperasi	Rima Febriana, SE, Ak
194	Untung Budi Raharjo	SMK N 1 Kuala Kampar Riau	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
195	Aisyah	SMKN 1 Pangkalan Kuras Riau	Increasing food quality using hydroponic system, plant propagation using tissue culture technique and oyster mushroom culture and processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
196	Andi Abdillah Mursit	SMKN 1 Pangkalan Kuras Riau	Increasing food quality using hydroponic system, plant propagation using tissue culture technique and oyster mushroom culture and processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
197	M. Aldi Purnomo	SMKN 1 Pangkalan Kuras Riau	Increasing food quality using hydroponic system, plant propagation using tissue culture technique and oyster mushroom culture and processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
198	Dhanu Permadi	SMKN 1 Pangkalan Kuras Riau	Increasing food quality using hydroponic system, plant propagation using tissue culture technique and oyster mushroom culture and processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani
199	Nelly Amella Putri	SMKN 1 Pangkalan Kuras Riau	Increasing food quality using hydroponic system, plant propagation using tissue culture technique and oyster mushroom culture and processing	Hydroponic Greenhouse, Tissue Culture Laboratory and Laboratory of Mushroom Cultivation	Riana Hartati, SSI and Dr Erina Sulistiani

200	Silma Rahmania Khoerunnisa	UIN Sunan Gunung Djati, Bandung, Faculty of Sciences and Technology (S1)	Effectivity Test on Cinnamon ( <i>Cinnamomum burmannii</i> ) Essential Oil as Biofumigant toward <i>Sithophilus zeamais</i> in Corn	Entomology Laboratory	Sri Widayanti, MSi
201	Ziza Adisti	UIN Sunan Gunung Djati, Bandung, Faculty of Sciences and Technology (S1)	Effectivity Test on Clove ( <i>Syzygium aromaticum</i> ) Essential Oil as Biofumigant toward <i>Tribolium castaneum</i> in Rice	Entomology Laboratory	Sri Widayanti, MSi
202	Sri Nanda Alfiani	UIN Sunan Gunung Djati, Bandung, Faculty of Sciences and Technology (S1)	Toxicity Test on Cinnamon ( <i>Cinnamomum burmannii</i> ) Essential Oil toward <i>Sithophilus zeamais</i> in Corn ( <i>Zea mays</i> L.)	Entomology Laboratory	Sri Widayanti, MSi
203	Nuraeni	UIN Sunan Gunung Djati, Bandung, Faculty of Sciences and Technology (S1)	Toxicity Test on Clove ( <i>Syzygium aromaticum</i> ) Essential Oil toward <i>Tribolium castenrum</i> in Rice	Entomology Laboratory	Sri Widayanti, MSi
204	Salma Vita Rianti	SMK Wikrama Bogor	Office Administration	FMD	Lastiah, SE
205	Valentina Witari	SMK Wikrama Bogor	Office Administration	GAD	Lidia Defita, SKom
206	Sri Rosyida	SMK Wirama Bogor	Office Administration	HRMD	Yunita, SP
207	Fera Safitri	SMK Wikrama Bogor	Online Business	PDS	Wahyu Dewanto, SHut
208	Alaisya Salwa Fatihah	SMK Wikrama Bogor	Online Business	PDS	Wahyu Dewanto, SHut
209	Nita Nuraeni	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
210	Shally Larasai Rahman	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
211	Yuli Yulianti	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
212	Ananta Satya Mubarak	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
213	Fahmi Abizar	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
214	Muhammad Ghifary Al Rifaldy	SMKN 1 Sukabumi	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
215	Anisa Febriyanti	Universitas Esa Unggul, Jakarta, Faculty of Health Sciences (S1)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
216	Gloria Ika Satriani	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, Faculty of Fisheries and Marine Sciences, Department of Aquaculture (S3)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
217	Lisa Sufiana	SMKPP Bireuen Aceh	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
218	Sya'ban Nur	SMKPP Bireuen Aceh	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
219	Zulkiram	SMKPP Bireuen Aceh	Oyster Mushroom Culture and Processing	Laboratory of Mushroom Cultivation	Dr Erina Sulistiani
220	Muhammad Salman Al Farizy	Universitas Nusa Bangsa, Bogor, West Java, Faculty of Forestry (S1)	Mapping using GIS System	Remote Sensing and Ecology Laboratory	Slamet Widodo, SSI

221	Didin Haerudin	Alumnus of Institut Pertanian Bogor (IPB-Bogor Agricultural University), Faculty of Forestry (Entrepreneur)	Observation on Mycorrhiza Genera	Biosystem and Landscape Management Laboratory	Risa Rosita, SSI
222	M. Rifki MY	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
223	Mahfud Faisal	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
224	Faris Al Ghazi	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
225	Sami Fikri	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
226	M. Fahri Fernanda	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
227	M. Nauval Rizki	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
228	Adi Rahmansyah	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
229	Syadila Elya	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
230	M. Jidan Zihan	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
231	M. Natha Maulana	SMK Kehutanan Bakti Rimba Bogor	Plant Mapping in SEAMEO BIOTROP	Biosystem and Landscape Management Laboratory	Armaiki Yusmur, MSi
232	Desta Armida	Politeknik Negeri Lampung (D3)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
233	Sintia Ramayanti	Politeknik Negeri Lampung (D3)	Plant Propagation using Tissue Culture Technique	Tissue Culture Laboratory	Dr Erina Sulistiani
234	Putra Arafah Subhani	SMK N 1 Temanggung	Mapping using GIS System	Remote Sensing and Ecology Laboratory	Slamet Widodo, SSI
235	Kamil Hidayat	SMK N 1 Temanggung	Mapping using GIS System	Remote Sensing and Ecology Laboratory	Slamet Widodo, SSI
236	Setiyaki Aruma Nandi	SMK N 1 Temanggung	Mapping using GIS System	Remote Sensing and Ecology Laboratory	Slamet Widodo, SSI
237	Adinda Rizka Triana	SMAK Bogor	Soil Fertility Analysis	Soil and Plant Laboratory	Eko Purwiyanto
238	Alfauzan Azhar	SMAK Bogor	Wastewater and Ambient Air Analysis	Water and Air Laboratory	Budi Cahyadi, SSI
239	Razzan Amrulloh	SMAK Bogor	Proximate Analysis	Food and Feed Laboratory	Ratnaningsih, SSI

## Appendix 5. BIOTROP Publications

### A. Articles, Technical Papers in Peer-Reviewed Journals and Proceedings

- Krisanti M, Maknuun LLI, Anzani YM, **Yuwono AS**, Widyastuti R, Wardiatno Y. 2020. A comparative study on macro invertebrates community in three rivers of Java Island, Indonesia. *AAFL Bioflux* Vol. 31. Issue 2. 570-578p
- Dharmaputra OS, Ambarwati S, Retnowati I, Nurfadila N**. August 2019. Fungal Infection of Stored Arabica Coffee (*Coffea arabica*) Beans in South Sulawesi Province, Indonesia. *Biotropia* 26(2): 127-135p
- Gholib G, Wahyuni S, Akmal M, Hasan M, Agil M, **Purwantara B**. 2019. The validation of a commercial enzyme-linked immunosorbent assay and the effect of freeze-thaw cycles of serum on the stability of cortisol and testosterone concentrations in Aceh cattle. *F1000 Research* 2019, 8: 1220 .
- Ugur MR, Abdelrahman AS, Evans HC, Gilmore AA, Hitit M, Arifiantini RI, **Purwantara B**, Kaya A, Memili E. 2019. Advances in Cryopreservation of Bull Sperm. *Frontiers in Veterinary Science*. 1 August 2019. Volume 6. Article 268.
- Indriastuti R, Ulum MF, Arifiantini RI, **Purwantara B**. 2020. Individual variation in fresh and frozen semen of Bali bulls (*Bos sondaicus*). *Veterinary World* 13(5): 840-846.
- Kurniati W, Agil M, **Purwantara B**, Imron M. 2020. Recipient Selection to Support the Success Rate of Frozen Thawed Belgian Blue Embryo Transfer. The 1<sup>st</sup> International Conference on Veterinary, Animal, and Environmental Sciences (ICVAES2019) Banda Aceh, Indonesia, October 15-17, 2019.
- Azhar A, Akmal M, Hambal M, Sabri M, Rosa TS, Rahmaddiansyah , **Purwantara B**, Dasru D. 2020. Physical Quality Assessment of Aceh Cattle Meat and Their Relationship with Meat Types and Hair Color Differences. In The 1<sup>st</sup> International Conference on Veterinary, Animal, and Environmental Sciences (ICVAES2019) Banda Aceh, Indonesia, October 15-17, 2019.

### B. Journals and Newsletters

- Biotropia* Vol. 26 No. 2 August 2019. In: SEAMEO BIOTROP, Bogor. 63 p.
- Biotropia* Vol. 26 No. 3 December 2019. In: SEAMEO BIOTROP, Bogor. 75 p.
- Biotropia* Vol. 27 No. 1 April 2020. In: SEAMEO BIOTROP, Bogor. 83 p
- Biotrop courier* Vol. XXI Quarter 3 2019. In: SEAMEO BIOTROP, Bogor. 12 p.
- Biotrop courier* Vol. XXI, Quarter 4 2019. In: SEAMEO BIOTROP, Bogor. 12 p.
- Biotrop courier* Vol. XXII, Quarter 1 2020. In: SEAMEO BIOTROP, Bogor. 12 p
- Biotrop courier* Vol. XXII, Quarter 2 2020. In: SEAMEO BIOTROP, Bogor. 12 p

### C. Monographs

- Imantho H, Nugraha HC. 2019. Pengolahan dan Analisis Data Spasial Menggunakan Perangkat Lunak open source QUANTUM GIS. SEAMEO BIOTROP, Bogor. 153 p.
- Prijono D, Dharmaputra OS, Widiyanti S. 2020. Pengelolaan Hama Gudang Terpadu. SEAMEO BIOTROP, Bogor. 281 p.
- Prijono D, Dharmaputra OS, Halid H. 2020. Pelatihan Fumigasi Fosfin yang Baik dan Benar. SEAMEO BIOTROP, Bogor. 59 p.
- Sulistiani E, Yani SA . 2019. Produksi Bibit Tanaman Dengan Menggunakan Teknik Kultur Jaringan. SEAMEO BIOTROP, Bogor. 206 p.
- Tjittrosoedirdjo S, Tjittrosoedirdjo SS, Setiyawati T. 2019 . Tumbuhan Invasif dan Pendekatan Pengelolaannya. SEAMEO BIOTROP, Bogor. 283 p.
- Utomo NBP. 2019. Teknik Pembuatan Pakan Ikan Skala Rumah Tangga (Home Made Fish Feed). SEAMEO BIOTROP, Bogor. 45p.

### D. Proceeding

- Paembonan SA, **Mansur I**, Husna, Tuheteru FD, Arif A, Albasri, (eds.). 2019. SEAMEO BIOTROP Special Publication No. 73. BIOTROP, Bogor. Prosiding Seminar Nasional Silvikultur VI: Penerapan Silvikultur untuk Pengelolaan Hutan dan Pengentasan Kemiskinan. SEAMEO BIOTROP, Bogor. 395 p.

### E. Research Reports

- Tjittrosoedirdjo S, Tjittrosoedirdjo SS, Bachri S, Wahyuni I. 2019. Development of Invasive Alien Plant Species Management in the Rehabilitating Invaded Ecosystem at Gunung Gede and Pangrango National Park. SEAMEO BIOTROP, Bogor. 27 p.
- Harahap IS, Widayanti S, Asnan TAW, Widhiastuti H, Nuryadin A, Yanto H. 2019. Extraction and Identification of Pheromone Compounds from Major Insect Pests of Stored Coffee Beans. SEAMEO BIOTROP, Bogor. 26 p.

- Wulandari D, Agus C, Maulana AF, Hasanah NAI, Rosita R, Ikay S. 2019. Restoration strategy on Marginal Karst Land in Imogiri Yogyakarta using Biological Agent: Phase 1. Application of Selected Microbes and Modified Organic Soil Amendment on Selected Plant Species under Nursery condition. SEAMEO BIOTROP, Bogor. 64 p.
- Yuwono AS, Wardiatno Y, Widyastuti R, Wulandari D. 2019 Developing Ecosystem Health Index in Indonesia (2<sup>nd</sup> Year). SEAMEO BIOTROP, Bogor. 47 p.
- Siregar UJ, Hartati S. 2019. Sengon (*Falcataria moluccana*) Resistance towards Bektor Pest (*Xystrocera festiva*) and Gall Rust (*Uromycladium tepperianum*) Part IV: Genomic Analysis and Gene Expression Study. SEAMEO BIOTROP, Bogor. 30 p.
- Hartoyo APP, Solikhin A, Herlina EN. 2019. Membrane Electrospinning Based on Carbon Nanotubes from the Trunk and Empty Bunches of Oil Palm for Water Purification. SEAMEO BIOTROP, Bogor. 40 p.
- Utami S, Kunarso A, Haneda NF, Lelana NE, Kurniawan A. 2019. Achievements in Mangrove Restoration by Cultivating *Sonneratia* sp. in Berbak and Sembilang National Park. SEAMEO BIOTROP, Bogor. 40 p.
- Qurniati R, Duryat, Darmawan A. 2019. The Role of Mangrove Ecosystem in Supporting Policy and Strategy for Managing Sustainable Mangrove Ecosystem. SEAMEO BIOTROP, Bogor. 19p.
- Wulandari C, Budiono P, Iswandaru D, Landicho LD, Abadillos MAG, Dicolen-Cabahug RE. 2019. Contributions of Traditional and Indigenous Practices to Ecological Restoration of Selected Watersheds/Landscapes in Indonesia and the Philippines. SEAMEO BIOTROP, Bogor. 158 p
- Lelana NE, Widyati E, Utami S. 2019. Assessing Tropical Forest Soil Microbiome in Natural Forest, Industrial Forest and Oil Palm Plantation. SEAMEO BIOTROP, Bogor. 63 p.
- Rahmawati SI, Simanjuntak P, Bustanussalam, Hapsari Y, Septiana E, M.Silzzati FN, Rachman F. 2019. Exploration of Mangrove Derived Endophytic Fungi for Bioproduction of Antioxidant and Anticancer Agent. SEAMEO BIOTROP, Bogor. 26 p
- Surono, Annisa W, Yuniarti E, Susilowati DN, Wijayanti M, Zaffan ZR. 2019. Dark Septate Endophytic Fungi (DSE) Diversity from Kalimantan Swampland Ecosystems and Their Role as a Rice Growth Promoter under Acidic Stress Conditions. SEAMEO BIOTROP, Bogor. 21 p.
- Jarulis. 2019. Phylogeography of Rhinoceros Hornbill (*Buceros rhinoceros* L, 1758) in Indonesia. SEAMEO BIOTROP, Bogor. 24 p.
- Juhaeti T. 2019. The Impact of Urban Tematic Garden Development on the Improvement of Student Learning Achievement at SMK Negeri 5 Bandung 2017. SEAMEO BIOTROP, Bogor. 32 p.
- Malik A, Rahim A. 2019. Assessment of Potentials for Payment for Mangrove Ecosystem Services in South Sulawesi Indonesia. SEAMEO BIOTROP, Bogor. 48 p.
- Munif A, Oktafiyanti MF, Eris DD. 2019. The Effectiveness of Various Formulation of Endophytic Bacteria from Mangrove to Control Phytophthora Leaf Blight on Japanese Taro. SEAMEO BIOTROP, Bogor. 75p.
- Siregar V, Koropitan AF. 2019. Projections of Vulnerability Parameters in the Java Sea Using Integration of Marine Biogeochemical and Land-Use Change Models. SEAMEO BIOTROP, Bogor. 54p.
- Siregar UJ, Hartati S. 2019. Study on Sengon (*Falcataria moluccana*) Resistance to Bektor Pest (*Xystrocera festiva*) and Gall Rust (*Uromycladium tepperianum*). SEAMEO BIOTROP, Bogor. 51 p.
- Widiastuti H, Wulandari D, Zarate J. 2019. Characterization of Soil Biophysicochemical Properties and Collection of Beneficial Soil Microorganisms Potential to Restore Post-Gold Mining Area in Indonesia and the Philippines. SEAMEO BIOTROP, Bogor. 55 p.
- Wulandari D, Agus C, Rosita R, Ikay S. 2019. Screening of Beneficial Soil Microorganism Collected from Post Tin Mining. 47p.
- Yuliasuti E, Saviska, Atalia K. 2019. Indraloka School Garden as A Means of Quality Improvement Nutrition and Quality of Students in SMA Negeri Taruna Nala Jawa Timur. SEAMEO BIOTROP, Bogor. 52 p
- Yuwono AS, Wardiatno Y, Widyastuti R, Wulandari D. 2019. Development of Ecosystem Health Index in Indonesia. SEAMEO BIOTROP, Bogor. 47p.

**APPENDIX 6.**  
**Scientific Training Courses, Workshops, Conferences and Symposia Attended  
 by SEAMEO BIOTROP's Staff during FY 2019/2020**

No.	Name	Title of Activity	Venue and Date	Title of Paper Presented
1	Sri Ismawati Soerianegara, MSc	Workshop on Academic Writing and Publishing Jointly organized by: Institut Pertanian Bogor (Bogor Agricultural University-IPB) and Enago Academy	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 1 July 2019	Participant
2	Zanne Sandriati Putri, SSI	Workshop on Academic Writing and Publishing Jointly organized by: Institut Pertanian Bogor (Bogor Agricultural University-IPB) and Enago Academy	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 1 July 2019	Participant
3	Dr Zulhamsyah Imran	Workshop on Synergizing Research on Developing Products from Marine Organisms (Algae and Sea Cucumber) and Prioritizing National Research on Maritime Affairs	101 Bogor Suryakencana Hotel, Bogor, 2 July 2019	Participant
4	Dr Erina Sulistiani	Workshop on Synergizing Research on Developing Products from Marine Organisms (Algae and Sea Cucumber) and Prioritizing National Research on Marine Fisheries Products	101 Bogor Suryakencana Hotel, Bogor, 2 July 2019	Participant
5	Riana Hartati, SSI	Training of Trainer for Teachers: Developing and Utilizing School Garden for Improving Students' Literacy, Nutrition and Entrepreneurship and Practises for Making School Garden Organized by: SEAMEO RECFON	Cihideung Ilir, Ciampea, Bogor, 6 July 2019	Resource Person
6	Dr Irdika Mansur	Workshop Acid Mine Water; Causes and Solutions	Yogyakarta, 8 - 12 July 2019	Participant
7	Armaiki Yusmur, MSI	Workshop Acid Mine Water; Causes and Solutions	Yogyakarta, 8 - 12 July 2019	Participant
8	Dr Zulhamsyah Imran	Inter-Centre Collaboration Meeting (ICCM)	SEAMEO Qitep in Science, Bandung, 10 - 12 July 2019	Participant
9	Dr Aslan	Inter-Centre Collaboration Meeting (ICCM)	SEAMEO Qitep in Science, Bandung, 10 - 12 July 2019	Participant
10	Dewi Suryani, MM	The 3 <sup>rd</sup> International Conference on Spatial Education (ICSE 2019)	Shangri-La Hotel, Surabaya, 12 - 15 July 2019	Participant
11	Dr Irdika Mansur	The 2019 International Conference on Mining and Environmental Technology (ICMET) Organized by: LPPM Universitas Muhammadiyah, Mataram, Lombok & IAGI Nustra	Lombok, 15 - 16 July 2019	Resource Person

12	Dr Zulhamsyah Imran	Technical Guidance on Strategic Environment Studies for Sulawesi Island Organized by: Directorate of Environmental Impact Prevention, Regional and Sectoral Policies, Directorate General of Forest Planology and Environmental Governance, the Ministry of Environment and Forestry of the Republic of Indonesia	BAPPEDA, Makassar, 15-17 July 2019	Resource Person
13	Dr Aslan	Socialization of Meeting Results on the 7 <sup>th</sup> Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)	Grand Savero Hotel, Bogor, 15 July 2019	Participant
14	Dr Soekisman Tjitrosemito	Socialization of Meeting Results on the 7 <sup>th</sup> Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES)	Grand Savero Hotel, Bogor, 15 July 2019	Participant
15	Prof Dr Okky Setyawati Dharmaputra	Serial Meeting 2, Komunitas MIKOINA Bogor Jointly organized by Komunitas MIKOINA Bogor, Department of Plant Protection and Department of Biology, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 16 July 2019	Participant
16	Ramdani	Oyster Mushroom Culture Organized by: Female Prison Class IIA	LAPAS Perempuan Kelas IIA, Jakarta, 16 - 17 July 2019	Resource Person
17	Samsul A. Yani, SSi	Oyster Mushroom Culture Organized by: Female Prison Class IIA	LAPAS Perempuan Kelas IIA, Jakarta, 16 - 17 July 2019	Resource Person
18	Sugih Mukti, AMd	Oyster Mushroom Culture Organized by: Female Prison Class IIA	LAPAS Perempuan Kelas IIA, Jakarta, 16 - 17 July 2019	Resource Person
19	Arif Nuryadin, BSc	Workshop on Activities Planning and Budget, Fiscal Year 2020, Work Unit SEAMEO SEAMOLEC	SEAMEO Qitep in Mathematics, Yogyakarta, 18-20 July 2019	Participant
20	M. Tajudin, MM	Workshop on Activities Planning and Budget, Fiscal Year 2020, Work Unit SEAMEO SEAMOLEC	SEAMEO Qitep in Mathematics, Yogyakarta, 18 - 20 July 2019	Participant
21	Woro Kanti Darmastuti, MSi	2 <sup>nd</sup> Training on Conserving Library Materials 2019 Organized by: National Library of the Republic of Indonesia	Horison Arcadia Hotel, Jakarta, 22 - 31 July 2019	Participant
22	Dewi Rahmawati, MSi	Seminar on Genetically Engineered Seed as A Strategy for Strengthening Food Security in Indonesia Organized by: The Coordinating Ministry for Economy of the Republic of Indonesia	Swiss-Belhotel Bogor, 22 July 2019	Participant



23	Dr Erina Sulistiani	Coordination Meeting on Distributing Assistances on Seaweed Nursery and Socializing Logistic System on Seaweed Nursery with Technical Implementation Unit of the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia Organized by: Directorate General of Aquaculture, the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia	Balai Perikanan Budidaya KKP, Batam, 24 - 26 July 2019	Resource Person Accelerating Seaweed Propagule and Plantlet Production using Tissue Culture Technique
24	Yuni Puspita Sari, MM	Workshop and National Seminar on Functional Position: "Strategy for Elevating Professionalism and Competence among Civil Servant in Industrial Era 4.0"	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 25 - 26 July 2019	Participant
25	Dr Zulhamsyah Imran	Technical Guidance on Strategic Environment Studies for Samarinda, East Kalimantan Organized by: Directorate of Environmental Impact Prevention, Regional and Sectoral Policies, Directorate General of Forest Planology and Environmental Governance, the Ministry of Environment and Forestry of the Republic of Indonesia	Dinas Pekerjaan Umum, Penataan Ruang dan Perumahan Rakyat Provinsi Kalimantan Timur, 29 July 2019	Resource Person: Analysis on RZWP3K Strategic Environment Studies
26	Dr Aslan	SEAMEO Centre Directors Meeting (CDM) 2019	Bangkok, Thailand, 5 - 8 August 2019	Participant
27	Risa Rosita, SSI	National Seminar on Food Sovereignty 2019	YTKI Building, Jakarta, 7 August 2019	Participant
28	Eriza Falashifa, SHut	National Seminar on Food Sovereignty 2019	YTKI Building, Jakarta, 7 August 2019	Participant
29	Santi Ambarwati, MSi	FGD on Aflatoxin Control in Rice and Milk	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 8 August 2019	Participant
30	Risa Rosita, SSI	Seminar and Workshop on Photosynthesis Analysis & Gas Exchange Research for Plant Science	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 9 August 2019	Participant
31	Dr Zulhamsyah Imran	SCESAP International Symposium "Coastal Ecosystem and Biodiversity of Asia-Pacific: Achieving SDG 14"	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 13 - 15 August 2019	Participant
32	Sri Widayanti, MSi	Southeast Asia Plant Protection Conference	IPB International Convention Centre, Bogor, 14 August 2019	Participant
33	Trijanti A. Widinni A., MSi	Southeast Asia Plant Protection Conference	IPB International Convention Centre, Bogor, 14 August 2019	Participant
34	Dr Erina Sulistiani	FGD on Prioritizing National Research on Marine Fisheries Products	Pusat Penelitian Oseanografi (P20) LIPI, Jakarta, 14 August 2019	Participant

35	Dr Erina Sulistiani	Improving Competence of Human Resources in Handling Seaweed Seeds Production using Tissue Culture Technique Organized by: Research Institute for Mariculture Ambon, Directorate General of Aquaculture, the Ministry of Marine Affairs and Fisheries of the Republic of Indonesia	Balai Perikanan Budidaya Laut Ambon, Ambon, 15 - 16 August 2019	Resource Person
36	Muhammad Hamdani	Technical Guidance on Implementing SNI Nomor 6989.57.2008 – Methods for Surface Water Sampling	Saung Cisadane, Tangerang, 20 August 2019	Participant
37	Sri Widayanti, MSi	Pest Academy Conference and Exhibition Organized by: The Association of Pest Control Companies in Indonesia	International Convention and Exhibition, Tangerang, 20 - 22 August 2019	Resource Person
38	Herni Widhiastuti, SSI	Pest Academy Conference and Exhibition Organized by: The Association of Pest Control Companies in Indonesia	International Convention and Exhibition, Tangerang, 20 August 2019	Participant
39	Asep Syarif Hidayat, MMPd	Workshop on the Role of Internal Supervisory Unit in Monitoring Education within Inspectorate Supervision III	Grand Mercure Hotel Bandung, 26 - 28 August 2019	Participant
40	M. Tajudin, MM	Workshop on the Role of Internal Supervisory Unit in Monitoring Education within Inspectorate Supervision III	Grand Mercure Hotel Bandung, 26 - 28 August 2019	Participant
41	Dr Irdika Mansur	Developing Eucalyptus Oil and Other Essential Oils as Business Commodities in PT Inhutani IV Organized by: PT Inhutani IV Medan, North Sumatra	Manggala Wanabakti Building, Jakarta, 27 August 2019	Resource Person
42	Sri Widayanti, MSi	Lake Forum: "Sinergizing Research and Policy in Managing Lakes in Indonesia"	Salak The Heritage Hotel, Bogor, 28 August 2019	Participant
43	Riza Fadli Assegaf	Management Guidance for Non-Tax Revenue and Direct Grant in the Ministry of Education and Culture 2019	Santika BSD City Hotel, Tangerang Selatan, 29 August 2019	Participant
44	Supriyatno, AMd	Management Guidance for Non-Tax Revenue and Direct Grant in the Ministry of Education and Culture 2019	Santika BSD City Hotel, Tangerang Selatan, 29 August 2019	Participant
45	Dr Soekisman Tjitrosemito	The 27 <sup>th</sup> Asian-Pacific Weed Science Society Conference 2019	Sarawak, Malaysia, 2 - 6 September 2019	Resource Person
46	Saiful Bachri, SSI	The 27 <sup>th</sup> Asian-Pacific Weed Science Society Conference 2019	Sarawak, Malaysia, 2 - 6 September 2019	Oral presenter with paper titled: Host Specificity Test of <i>Chiasmia assimilis</i> Warren (Lepidoptera: Geometridae) as Biocontrol Agents for <i>Vachellia nilotica</i> in Baluran National Park, East Java, Indonesia

47	Indah Wahyuni, MSi	The 27 <sup>th</sup> Asian-Pacific Weed Science Society Conference 2019	Sarawak, Malaysia, 2 - 6 September 2019	Oral presenter with paper titled: Control and Eradication of <i>Chimonobambusa quadrangularis</i> in Gunung Gede Pangrango National Park
48	Prof Dr Okky Setyawati Dharmaputra	Training of Trainers on Identification of Mycotoxin-Producing Fungi	SEAMEO BIOTROP, Bogor, 3 - 6 September 2019	Resource Person: Biodiversity of Mycotoxin-Producing Fungi found in Food in Indonesia
49	Didi Junaedi, AMd	Training of Trainer for Teachers: Developing School Model for "Nutrition for Achievement" Program in Cimahi City Organized by: SEAMEO RECFON	SMK Negeri 8, Cimahi, 5 - 6 September 2019	Resource Person: Vegetables Cultivation
50	Dr Aslan	Seminar on Youth Biotech Outreach	Universitas Indonesia, Depok, 10 September 2019	Participant
51	Sugih Mukti, AMd	Training Course on Oyster Mushroom Culture Organized by: PT Prima Kelola, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	Tanah Bumbu, Kalimantan Selatan, 12 - 15 September 2019	Resource Person
52	Prof Dr Okky Setyawati Dharmaputra	The 2019 Food Microbiology Seminar: "Rapid and Validated Media Corresponding to ISO Methods"	Bogor, 19 September 2019	Participant
53	Dr Irdika Mansur	Public Lecture: "Elevating the Competence of Young Entrepreneurs in Agricultural Pro Organized by: Faculty of Agriculture, Universitas Timor, the Ministry of Research, Technology and Higher Education of the Republic of Indonesia	Student Center of Universitas Timor, Kefamenanu, Nusa Tenggara Timur, 20 September 2019	Resource Person
54	Peri Siantuni, SE	Technical Guidance on Procedures and Implementation of Accountability Report for Business Trips and Technical Guidance on Financial Administration and Planning for PPTK, PPK and Treasurer	Surabaya, 15 - 18 September 2019	Participant
55	Supriyatno, AMd	Technical Guidance on Procedures and Implementation of Accountability Report for Business Trips and Technical Guidance on Financial Administration and Planning for PPTK, PPK and Treasurer	Surabaya, 15 - 18 September 2019	Participant
56	Dr Aslan	The Fifth International Conference of Indonesia Society for Remote Sensing (ICOIRS)	Institut Teknologi Nasional, Bandung, 17 - 19 September 2019	Participant
57	Haritz Cahya Nugraha, MT	The International Conference on Embedding Artificial Intelligence (AI) in Education Policy and Practice for Southeast Asia	Holiday Inn & Suites Gajah Mada Hotel, Jakarta, 18 - 19 September 2019	Participant

58	Dani Yudi Trisna, AMd	The International Conference on Embedding Artificial Intelligence (AI) in Education Policy and Practice for Southeast Asia	Holiday Inn & Suites Gajah Mada Hotel, Jakarta, 18 - 19 September 2019	Participant
59	Zanne Sandriati Putri, SSi	The International Conference on Embedding Artificial Intelligence (AI) in Education Policy and Practice for Southeast Asia	Holiday Inn & Suites Gajah Mada Hotel, Jakarta, 18 - 19 September 2019	Participant
60	Sri Ismawati Soerianegara, MSc	The International Conference on Embedding Artificial Intelligence (AI) in Education Policy and Practice for Southeast Asia	Holiday Inn & Suites Gajah Mada Hotel, Jakarta, 18 - 19 September 2019	Participant
61	Dr Impron	The International Conference on Embedding Artificial Intelligence (AI) in Education Policy and Practice for Southeast Asia	Holiday Inn & Suites Gajah Mada Hotel, Jakarta, 18 September 2019	Moderator
62	Santi Ambarwati, MSi	Training Course on Risk Analysis in Implementing ISO 17025-2017 Organized by: Department of Biology, Faculty of Mathematics and Natural Sciences, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	Institut Pertanian Bogor (IPB-Bogor Agricultural University), Bogor, 17 September 2019	Resource Person
63	Armaiki Yusmur, MSi	One-day Certification Try Out Organized by: Indonesian Society for Remote Sensing	Institut Teknologi Nasional, Bandung, 16 September 2019	Instructor
64	Dr Aslan	The 1 <sup>st</sup> Joint Working Group (JWG) Indonesia-France, 2019	Atlet Century Hotel, Jakarta, 20 September 2019	Participant
65	Dr Supriyanto	FGD on Study of LPK Draft for Aromatherapy	Rumah Atsiri Indonesia, Karanganyar, 21 September 2019	Participant
66	M. Tajudin, MM	Workshop on Reporting and Controlling Program, Activities and Budget Implemetation within the Ministry of Education and Culture, FY 2019	Horison Ultima Bhuvana Hotel, Bogor, 25 - 27 September 2019	Participant
67	Dr Erina Sulistiani	The 3 <sup>rd</sup> International Workshop on Mushroom Biology and Technology (IWMBT)	IPB International Convention Center, Bogor, 25 September 2019	Participant
68	Ir Ina Retnowati	The 3 <sup>rd</sup> International Workshop on Mushroom Biology and Technology (IWMBT)	IPB International Convention Center, Bogor, 25 September 2019	Participant
69	Dr Aslan	Coordination Meeting on Forum for Marine and Fisheries Products Innovators (ForKIP KP) Zone 1	Science Techno Park Building, Bogor, 26 September 2019	Participant
70	Dr Erina Sulistiani	Coordination Meeting on Forum for Marine and Fisheries Products Innovators (ForKIP KP) Zone 1	Science Techno Park Building, Bogor, 26 September 2019	Participant
71	Dr Zulhamsyah Imran	FGD on Strategic Planning for SEAMEO SEAMEO Qitep in Science and SEAMEO CECCEP	SEAMEO CECCEP, Bandung, 27 - 28 September 2019	Participant

72	Prof Dr Arief Sabdo Yuwono	Training Course on Urban Agriculture for Special Education Teachers	P4TK and PLB, Bandung, 30 September - 2 October 2019	Resource Person: 1. Overview of Urban Agriculture: Concepts and Principles 2. Hydroponics Technology 3. Composting of Solid Organic Wastes 4. Verticulture
73	Riana Hartati, SSI	Training Course on Urban Agriculture for Special Education Teachers	P4T and PLB, Bandung, 30 September - 2 October 2019	Resource Person: Practicum on Hydroponics
74	Dr Supriyanto	The 1 <sup>st</sup> International Symposium of Agarwood and Aromatic Plants 2019 (The 1 <sup>st</sup> ISAAP 2019)	Golden Palace Hotel, Mataram, 1 - 2 October 2019	Participant
75	Ulfah Zul Farisa, SHut	The 2 <sup>nd</sup> International Conference on Environment and Forest Conservation	Institut Pertanian Bogor (Bogor Agricultural University-IPB), 1 - 2 October 2019	Participant
76	Arif Nuryadin, BSc	Socialization of Strategic Steps for Final Year and Reconciliation for 7 SEAMEO Centres in Indonesia	SEAMEO Qitep in Mathematics, Yogyakarta, 2 - 4 October 2019	Participant
77	Herman Apriyadi, SE	Socialization of Strategic Steps for Final Year and Reconciliation for 7 SEAMEO Centres in Indonesia	SEAMEO Qitep in Mathematics, Yogyakarta, 2 - 4 October 2019	Participant
78	Peri Siantuni, SE	Socialization of Strategic Steps for Final Year and Reconciliation for 7 SEAMEO Centres in Indonesia	SEAMEO Qitep in Mathematics, Yogyakarta, 2 - 4 October 2019	Participant
79	Fitri Junaedy, SEI	Technical Guidance on SIMPEL Application and The Latest Regulation for Overseas Business Trips	Amaris Pakuan Hotel, Bogor, 4 - 6 October 2019	Participant
80	Dr Zulhamsyah Imran	FDG and Field Trip Organized by: Directorate of Open Land Damage Recovery, Directorate General of Pollution Control and Environmental Damage, the Ministry of Environment and Forestry of the Republic of Indonesia	Swiss-Belhotel, Samarinda, 4 October 2019	Resource Person
81	Tenni Wahyuni, AMd	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 4 - 10 October 2019	Executive committee
82	Rima Febriana, SE, Ak	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 4 - 10 October 2019	Executive committee
83	Bambang Sulistio, SSI	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 4 - 10 October 2019	Executive committee
84	Rizkia Tirtani	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 4 - 10 October 2019	Executive committee
85	Dr Irdika Mansur	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 6 - 10 October 2019	Director of SEAMEO BIOTROP
86	Dr Zulhamsyah Imran	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 6 - 10 October 2019	Deputy Director for Administration
87	Dr Aslan	The 57 <sup>th</sup> SEAMEO BIOTROP Governing Board Meeting	Phnom Penh, Cambodia, 6 - 10 October 2019	Acting Deputy Director for Program

88	Sri Widayanti, MSi	International Conference and the 10 <sup>th</sup> Congress of the Entomological Society of Indonesia (ICCESI) 2019	Kuta, Bali, 6 - 9 October 2019	Participant
89	Trijanti A. Widinni A., MSi	International Conference and the 10 <sup>th</sup> Congress of the Entomological Society of Indonesia (ICCESI) 2019	Kuta, Bali, 6 - 9 October 2019	Oral presenter with paper titled: Formulation of Clove Oil-Based Tablet as Alternative Controlling Agent to Control Stored Product Insect <i>Tribolium castaneum</i> Herbst
90	Dr Idham Sakti Harahap	International Conference and the 10 <sup>th</sup> Congress of the Entomological Society of Indonesia (ICCESI) 2019	Kuta, Bali, 6 - 9 October 2019	Oral presenter with paper titled: Potential of Essential Oils to Control Stored Product Insects
91	Deki Zulkarnain, SSos	Technical Guidance on Procedure in Filling Out and Reporting Tax Forms for Government Institutions	Makassar, Sulawesi Selatan, 7 - 8 October 2019	Participant
92	Jonner Situmorang, MSi	Workshop on Networking and Assisting Partner Industries	SMK Muhammadiyah 1 Rangkasbitung, Lebak, 7 - 8 October 2019	Participant
93	Dewi Suryani, MM	In-Country Training on School Garden Program	Royal University of Phnom Penh, Phnom Penh, Cambodia, 8 - 13 October 2019	Executive committee
94	Rasyid Aulia Rachman, SSi	In-Country Training on School Garden Program	Royal University of Phnom Penh, Phnom Penh, Cambodia, 8 - 13 October 2019	Executive committee
95	Samsul A. Yani, SSi	The Implementation of Entrepreneurship-based Biology Organized by: Faculty of Mathematics and Natural Sciences, Universitas Pakuan, Bogor	Universitas Pakuan, Bogor, 8 October 2019	Resource Person
96	Santi Ambarwati, MSi	The Implementation of ISO 17025 within the Faculty of Mathematics and Natural Sciences Organized by: Faculty of Mathematics and Natural Sciences, Universitas Pakuan, Bogor	Universitas Pakuan, Bogor, 8 October 2019	Resource Person
97	Yuni Puspita Sari, MM	Seminar and Book Launching "Enriching School Supervisors with Characters Education for Strengthening Pancasila Ideology"	Kementerian Pendidikan dan Kebudayaan, Jakarta, 9 October 2019	Participant
98	Dr Erina Sulistiani	Accelerating SEAMEO Programs and Foreign Collaborations Organized by: The Ministry of Education and Culture of the Republic of Indonesia	The Alana Yogyakarta Hotel and Convention Centre, Yogyakarta, 11 October 2019	Resource Person: Initiation of SEAMEO's Program in Introducing Agriculture for Developing Entrepreneurship Mentality
99	Santi Ambarwati, MSi	Assessments for the Office of Environment of Tapin Regency	Kalimantan Selatan, 14 - 15 October 2019	Assessor

100	Anidah, SSI	The 16 <sup>th</sup> ASEAN Food Conference: "Outlook and Opportunities of Food Technology and Culinary for Tourism Industry"	Sanur, Bali, 15 - 18 October 2019	Oral presenter with paper titled: Screening of Aflatoxigenic <i>Aspergillus flavus</i> Strains and Aflatoxin Content from Agricultural Commodities in Indonesia
101	Prof Dr Okky Setyawati Dharmaputra	The 16 <sup>th</sup> ASEAN Food Conference: "Outlook and Opportunities of Food Technology and Culinary for Tourism Industry".	Sanur, Bali, 15 - 18 October 2019	Oral presenter with paper titled: Potency of Yeast as Biocontrol Agent of Ochratoxin A-Producing Fungi in Arabica Coffee
102	Nijma Nurfadilla, SSI	The 16 <sup>th</sup> ASEAN Food Conference: "Outlook and Opportunities of Food Technology and Culinary for Tourism Industry".	Sanur, Bali, 15 - 18 October 2019	Participant
103	Dr Supriyanto	International Conference on Food and Economic Security and Environmental Sustainability Organized by: SEAMEO SEARCA	Cagayan State University-Andrews, the Philippines, 16 - 18 October 2019	Plenary Session Oral presenter with paper titled: Knowledge and Technology Transfer from Higher Education and Research Institutions to Vocational Technical Schools to Enhance Food Security in Southeast Asian Region
104	Sugih Mukti, AMd	Training Course on Oyster Mushroom Cultivation: Advance Level Organized by: Balai Latihan Kerja Lapas Kelas I Cipinang, DKI Jakarta	Balai Latihan Kerja Lapas Kelas I Cipinang, Jakarta, 16-17 October 2019	Resource Person
105	Ramdani	Training Course on Oyster Mushroom Cultivation: Advance Level  Organized by: Balai Latihan Kerja Lapas Kelas I Cipinang, DKI Jakarta	Balai Latihan Kerja Lapas Kelas I Cipinang, Jakarta, 16 - 17 October 2019	Resource Person
106	Dr Irdika Mansur	Conference on Essential Oils from Tropical Forests and Ex-Mining Land in Indonesia for Community Health and Welfare Organized by: Faculty of Pharmacy, Universitas Mulawarman	Aston Hotel, Samarinda, 16 - 17 October 2019	Resource Person: The Potency of Ex-Mining Land in Indonesia for Growing Essential-Oil-Producing Plants
107	Dr Erina Sulistiani	Technical Assistance in SMK Negeri 2 Cilaku Organized by: SMK Negeri 1 Cilaku	SMK Negeri 2 Cilaku, Cianjur, 17 - 18 October 2019	Resource Person: Tissue Culture Technique
108	Dr Irdika Mansur	Committee Meeting SD, GCG, Nomination and Compensation Organized by: PT Indo Tambangraya Megah, Tbk.	Pondok Indah Office Tower, Jakarta, 17 October 2019	Resource Person
109	Ujang Sanusi	Socialization of State-Owned Assets Management in Working Unit Level	KPKNL, Tangerang, 21 October 2019	Participant

110	Arif Nuryadin, BSc	Technical Guidance on SIRENBAJA and SIMPEL	SEAMEO CECCEP, Lembang, Bandung, 21 - 23 October 2019	Participant
111	Wati Madyawati	Technical Guidance on SIRENBAJA and SIMPEL	SEAMEO CECCEP, Lembang, Bandung, 21 - 23 October 2019	Participant
112	Devi Septrianti, SE	Technical Guidance on SIRENBAJA and SIMPEL	SEAMEO CECCEP, Lembang, Bandung, 21 - 23 October 2019	Participant
113	Alfi Dwi Nugroho, AMd	Technical Guidance on SIRENBAJA and SIMPEL	SEAMEO CECCEP, Lembang, Bandung, 21 - 23 October 2019	Participant
114	M. Tajudin, MM	Technical Guidance on SIRENBAJA and SIMPEL	SEAMEO CECCEP, Lembang, Bandung, 21 - 23 October 2019	Participant
115	Dr Sri S. Tjitrosoedirdjo	FGD on Planning the Functional Position for Herbarium Curator	Santika Hotel Taman Mini Indonesia Indah, Jakarta, 22 October 2019	Participant
116	Ir Ina Retnowati	FGD on Planning the Functional Position for Herbarium Curator	Santika Hotel Taman Mini Indonesia Indah, Jakarta, 22 October 2019	Participant
117	Dr Irdika Mansur	Discussion on Program and Budget for 2020 within the Secretariate General of the Ministry of Education and Culture of the Republic of Indonesia	Le Polonia Hotel, Medan, 25 - 27 October 2019	Participant
118	Arif Nuryadin, BSc	Discussion on Program and Budget for 2020 within the Secretariate General of the Ministry of Education and Culture of the Republic of Indonesia	Le Polonia Hotel, Medan, 25 - 27 October 2019	Participant
119	Peri Siantuni, SE	Discussion on Program and Budget for 2020 within the Secretariate General of the Ministry of Education and Culture of the Republic of Indonesia	Le Polonia Hotel, Medan, 25 - 27 October 2019	Participant
120	Drs Agung Mustofa	Comparison Study on Water Biota Analysis	Institut Pertanian Bogor (Bogor Agricultural University-IPB), Bogor, 23 October 2019	Participant
121	Samsul A. Yani, SSi	Vocational Training for Tissue Culture Practitioners Organized by: Agriculture Training Center, Agricultural Extension and Professionals Development Agency, the Ministry of Agriculture of the Republic of Indonesia	Balai Besar Pelatihan Pertanian (BPPP), Bandung, 23 October 2019	Resource Person
122	Dr Zulhamsyah Imran	Inter Centre Collaboration Meeting (ICCM)	SEAMEO Qitep in Mathematics, Yogyakarta, 28 - 31 October 2019	Participant
123	Dr Abdul Munif	Technical Guidance on "Study on Tropical Quality Fruits for Developing and Empowering Agriculture Vocational Schools in Indonesia: Optimizing the Growth of Healthy and Productive Plants in Partners Vocational Schools in West Java and Banten Provinces"	SMKN 3 Pandeglang, Pandeglang, 29 October 2019	Participant
124	Rima Febriana, SE, Ak	The 45 <sup>th</sup> National Workshop on Managing Scientific Journals	Atria Hotel, Malang, 29 October - 1 November 2019	Participant



125	Zanne Sandriati Putri, SSi	The 45 <sup>th</sup> National Workshop on Managing Scientific Journals	Atria Hotel, Malang, 29 October - 1 November 2019	Participant
126	Dewi Suryani, MM	Inter Centre Collaboration Meeting (ICCM)	SEAMEO Qitep in Mathematics, Yogyakarta, 28 - 31 October 2019	Participant
127	Dr Aslan	Inter Centre Collaboration Meeting (ICCM)	SEAMEO Qitep in Mathematics, Yogyakarta, 29 - 31 October 2019	Participant
128	Dr Irdika Mansur	Technical Briefing on Forest Reclamation and Watershed Rehabilitation Organized by: Directorate Soil and Water Conservation, Directorate General of Watershed and Protected Forest Control, the Ministry of Environment and Forestry of the Republic of Indonesia	Platinum Balikpapan Hotel and Convention Hall, Balikpapan, 1 - 3 November 2019	Resource Person
129	Alfi Dwi Nugroho, AMD	Socialization of Strategic Steps for Final Year and Reconciliation for 7 SEAMEO Centres in Indonesia	SEAMEO SEAMOLEC, Tangerang Selatan, 1 - 2 November 2019	Participant
130	Bambang Sulistio, SSi	Socialization of Strategic Steps for Final Year and Reconciliation for 7 SEAMEO Centres in Indonesia	SEAMEO SEAMOLEC, Tangerang Selatan, 1 - 2 November 2019	Participant
131	Dr Irdika Mansur	The 5 <sup>th</sup> International Symposium on Wetlands Environmental Management (ISWEM) Organized by: Universitas Lambung Mangkurat	Universitas Lambung Mangkurat, Banjarmasin, 4 - 6 November 2019	Resource Person
132	Dr Aslan	International Seminar on "Beyond Access and Participation: Enhancing the Quality of Early Childhood and Family Education as A Media for Achieving Sustainable Development Goals 2030"	Millenium Hotel, Jakarta, 4 - 7 November 2019	Participant
133	Dr Supriyanto	Meeting on "Synergizing Stakeholders in Developing Fruit and Floriculture Area" Organized by: Directorate General of Horticulture, the Ministry of Agriculture of the Republic of Indonesia	Salak The Heritage Hotel, Bogor, 7 - 8 November 2019	Resource Person
134	Dr Zulhamsyah Imran	Audience Meeting and Discussion with the Government of Padang City about SEAMEO BIOTROP's programs to Empower Local Community by Implementing Urban Agriculture in Agam Regency and to Assess Possible Collaborative Activities	Rumah Dinas Walikota Padang, Padang, 11 November 2019	Participant
135	Sri Widayanti, MSi	Seminar & Exhibition "Smart Agricultural Technique & Innovation"	The Pullman Hotel, Central Park, Jakarta, 12 November 2019	Participant
136	Herni Widhiastuti, SSi	Seminar & Exhibition "Smart Agricultural Technique & Innovation"	The Pullman Hotel, Central Park, Jakarta, 12 November 2019	Participant
137	Indah Wahyuni, MSi	Seminar & Exhibition "Smart Agricultural Technique & Innovation"	The Pullman Hotel, Central Park, Jakarta, 12 November 2019	Participant

138	Dr Zulhamsyah Imran	FGD on Drafting Document for Strategic Environment Studies RZWP3K, Papua Province Year 2019-2039	Jayapura, 14 - 15 November 2019	Resource Person
139	Tenni Wahyuni, AMd	Visit and Consultation on Documents Archive Procedure	Lembaga Arsip Nasional Republik Indonesia, Jakarta, 12 November 2019	Visitor
140	Lidia Defita, SKom	Visit and Consultation on Documents Archive Procedure	Lembaga Arsip Nasional Republik Indonesia, Jakarta, 12 November 2019	Visitor
141	Zulkarnaen Noor Syarif, SKom	Visit and Consultation on Documents Archive Procedure	Lembaga Arsip Nasional Republik Indonesia, Jakarta, 12 November 2019	Visitor
142	Sri Widayanti, MSi	Seminar on Applied Test Results Year 2019	Balai Uji Terap Teknik dan Metode Karantina Pertanian, Bekasi, 13 November 2019	Resource Person: Effect of Sulfuryl Flouride as Fumigant toward the Mortality of <i>Liposcelis</i> spp.
143	Dewi Rahmawati, MSi	Training Course on "Next Generation Sequencing for Genomic and Transcriptomic Research"	Universitas Lampung, Bandar Lampung, 19 - 21 November 2019	Participant
144	Santi Ambarwati, MSi	Laboratory Assessment in Universitas Muhammadiyah Malang	Universitas Muhammadiyah Malang, Malang, 18 - 19 November 2019	Assessor
145	Dr Zulhamsyah Imran	The International Seminar on Rural Sociology and Community Development (ISCR 2019)	Lombok, Nusa Tenggara Barat, 20 - 23 November 2019	Resource Person
146	Armaiki Yusmur, MSi	Training Course on Soil Characteristics and Geographic Information System Organized by: PT Performa Quality Mandiri	PT Borneo Indobara, Kalimantan Selatan, 19 - 22 November 2019	Resource Person
147	Harry Imantho, MSc	Training Course on Geographic Information System using Drone Acquired Data and Analyses in Agriculture Organized by: Politeknik Pembangunan Pertanian Medan, Agricultural Extension and Professionals Development Agency, the Ministry of Agriculture of the Republic of Indonesia	Politeknik Pembangunan Pertanian (POLBANGTAN), Medan, 21 - 23 November 2019	Resource Person: 1. Concept of Geographic Information System and Remote Sensing 2. Geographic Information System and Remote Sensing Application in Supporting Precision Agriculture 3. Results of Image Digitization Technique Acquired by Drone 4. Palm Area and Population Calculation using Drone Acquired Data 5. NDVI Analysis using Drone Acquired Data as Plant Health Indication

148	Slamet Widodo Sugiarto, SSI	Training course on Geographic Information System using Drone Acquired Data and Analyses in Agriculture Organized by: Politeknik Pembangunan Pertanian Medan, Agricultural Extension and Professionals Development Agency, the Ministry of Agriculture of the Republic of Indonesia	Politeknik Pembangunan Pertanian (POLBANGTAN), Medan, 21 - 23 November 2019	Resource Person: 1. Introducing Drone Utilization in Mapping 2. Drone Usage in Mapping Planning Technique 3. Using Drone for Data Acquisition (Mapping) and Analyses
149	Dr Aslan	Empowering Research Results and Implementing Innovations Organized by: Perhutani	Puslitbang Perhutani Cepu, Cepu, 20 - 21 November 2019	Resource Person
150	Dr Supriyanto	Empowering Research Results and Implementing Innovations Organized by: Perhutani	Puslitbang Perhutani Cepu, Cepu, 20 - 21 November 2019	Resource Person
151	Dr Arief Sabdo Yuwono	Discussion and Sharing on Drafting Competition Concept and Proposal Finalization Organized by: Directorate General of Teachers and Education Personnels, the Ministry of Education and Culture of the Republic of Indonesia	Kementerian Pendidikan dan Kebudayaan Republik Indonesia, Jakarta, 21 - 22 November 2019	Resource Person
152	Dr Irdika Mansur	The 42 <sup>nd</sup> SEAMEO High Officials Meeting	Bangkok, 26 - 28 November 2019	Participant
153	Dr Zulhamsyah Imran	The 42 <sup>nd</sup> SEAMEO High Officials Meeting	Bangkok, 26 - 28 November 2019	Participant
154	M. Tajudin, MM	Technical Guidance on SIRENBAJA to Accelerate Goods and Services Procurement in FY 200	Jakarta, 28 - 30 November 2019	Participant
155	Arif Nuryadin, BSc	Technical Guidance on SIRENBAJA to Accelerate Goods and Services Procurement in FY 200	Jakarta, 28 - 30 November 2019	Participant
156	Zulkarnaen Noor Syarif, SKom	Face to Face Training in SEAMOLEC: Introduction to Internet of Things for Beginners	SEAMEO SEAMOLEC, Tangerang Selatan, 29 November - 1 December 2019	Participant
157	Eko Purwiyanto	E-Invoice Socialization	Century Park Hotel, Jakarta, 29 November 2019	Participant
158	Elvina Rahayu, SAK	E-Invoice Socialization	Century Park Hotel, Jakarta, 29 November 2019	Participant
159	Herman Apriyadi, SE	Socialization of SAKTI SIRENBAJA and Reconciliation of 7 SEAMEO Centres in Indonesia	SEAMEO SEAMOLEC, Tangerang Selatan, 2 - 4 December 2019	Participant
160	Peri Siantuni, SE	Socialization of SAKTI SIRENBAJA and Reconciliation of 7 SEAMEO Centres in Indonesia	SEAMEO SEAMOLEC, Tangerang Selatan, 2 - 4 December 2019	Participant
161	Supriyatno, AMd	Socialization of SAKTI SIRENBAJA and Reconciliation of 7 SEAMEO Centres in Indonesia	SEAMEO SEAMOLEC, Tangerang Selatan, 2 - 4 December 2019	Participant

162	Asep Syaefudin, SE	Exhibition and Seminar on Creative Products from SMK Students Year 2019	Kementerian Pendidikan dan Kebudayaan Republik Indonesia, Jakarta, 4 December 2019	Participant
163	Sri Widayanti, MSi	Talk Show on Accelerating Modern Agriculture Development in Industry 4.0	IPB International Convention Centre, Bogor, 5 December 2019	Resource Person
164	Haritz Cahya Nugraha, MT	Meeting on Developing Database for Medicinal Plants and Traditional Medicine Research Results (RISTOJA) Organized by: Agency for Research and Development of Medicinal Plants and Traditional Medicine, the Ministry of Health of the Republic of Indonesia	Mercure Jakarta Batavia Hotel, Jakarta, 11 - 13 December 2019	Resource Person: Database Management in SEAMEO BIOTROP
165	Asep Syaefudin, SE	Meeting on Non Tax Revenue and Maintenance of Facilities and Infrastructure	Pusat Pengembangan Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (PP-PAUD dan Dikmas), Jakarta, 12 - 13 December 2019	Participant
166	Agus Sujadi	Meeting on Non Tax Revenue and Maintenance of Facilities and Infrastructure	Pusat Pengembangan Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (PP-PAUD dan Dikmas), Jakarta, 12 - 13 December 2019	Participant
167	Lastiah, SE	Meeting on Non Tax Revenue and Maintenance of Facilities and Infrastructure	Pusat Pengembangan Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (PP-PAUD dan Dikmas), Jakarta, 12 - 13 December 2019	Participant
168	Peri Siantuni, SE	Meeting on Non Tax Revenue and Maintenance of Facilities and Infrastructure	Pusat Pengembangan Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (PP-PAUD dan Dikmas), Jakarta, 12 - 13 December 2019	Participant
169	Herman Apriyadi, SE	Meeting on Non Tax Revenue and Maintenance of Facilities and Infrastructure	Pusat Pengembangan Pendidikan Anak Usia Dini dan Pendidikan Masyarakat (PP-PAUD dan Dikmas), Jakarta, 12-13 December 2019	Participant
170	Dr Zulhamsyah Imran	Public Consultation II and Drafting Report on KLHS RZWP3K of Papua Province  Organized by: The Office of Environment Management, the Government of Papua Province	Papua, 12 December 2019	Resource Person: Progress of Preparing RZWP3K Documents for Papua Province
171	Armaiki Yusmur, MSi	Public Consultation II and Drafting Report on KLHS RZWP3K of Papua Province  Organized by: The Office of Environment Management, the Government of Papua Province	Papua, 12 December 2019	Resource Person: Progress of Preparing RZWP3K Documents for Papua Province

172	Dr Erina Sulistiani	Marine and Fisheries Business and Investment Forum	Jakarta Convention Center, Jakarta, 13 December 2019	Participant
173	Shella Marlinda, MSi	Marine and Fisheries Business and Investment Forum	Jakarta Convention Center, Jakarta, 13 December 2019	Participant
174	Sri Widayanti, MSi	One-Day Dissemination (ODD): "Innovation and Contribution of Applied Test to the Threefold Export Movement" Organized by: Institute for Applied Testing on Agricultural Quarantine Technique and Method, the Agency for Agricultural Quarantine, the Ministry of Agriculture of the Republic of Indonesia	Auditorium Balai Uji Terap Teknik dan Metode Karantina Pertanian, Bekasi, 17 December 2019	Resource Person/Research consultant
175	Dr Idham Sakti Harahap	One Day Dissemination (ODD): "Innovation and Contribution of Applied Test to the Threefold Export Movement" Organized by: Institute for Applied Testing on Agricultural Quarantine Technique and Method, the Agency for Agricultural Quarantine, the Ministry of Agriculture of the Republic of Indonesia	Auditorium Balai Uji Terap Teknik dan Metode Karantina Pertanian, Bekasi, 17 December 2019	Resource Person/Research consultant
176	Trijanti A. Widinni A., MSi	One Day Dissemination (ODD): "Innovation and Contribution of Applied Test to the Threefold Export Movement" Organized by: Institute for Applied Testing on Agricultural Quarantine Technique and Method, the Agency for Agricultural Quarantine, the Ministry of Agriculture of the Republic of Indonesia	Auditorium Balai Uji Terap Teknik dan Metode Karantina Pertanian, Bekasi, 17 December 2019	Participant
177	Dr Erina Sulistiani	Training Course on Vegetative Propagation using Tissue Culture Technique Organized by: Center for Forestry Research and Development, Perhutani	Puslitbang Perhutani Cepu, Cepu, 17 - 18 December 2019	Resource Person
178	Armaiki Yusmur, MSi	Training Course on Eco-Friendly and Safety Mining Organized by: Center for Environmental Technology Studies	Grand Salira Hotel, Yogyakarta, 21 - 22 December 2019	Resource Person: Mining Impact and Restoration: Mining Water
179	Zulkarnaen Noor Syarif, SKom	Workshop on Magnetcode Robotics for Strengthening STEM Education	SEAMEO Qitep in Science, Bandung, 23 December 2019	Participant
180	Ir Ina Retnowati	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
181	Indrajit	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
182	Sunardi Ikay	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant

183	Irawan	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
184	Heri Yanto	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
185	Budiyono	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
186	Herni Widhiastuti, SSI	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
187	Nijma Nurfadilla, SSI	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
188	Saiful Bachri, SSI	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
189	Indah Wahyuni, MSi	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
190	Shella Marlinda, MSi	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
191	Trijanti A. Widinni A., MSi	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
192	Iman	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
193	Yana	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
194	Nurdiansyah	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
195	Armaiki Yusmur, MSi	Half-a-day In-house Training Course on Intermediate Inspection for Laboratory Equipment, Enclosure and Scale	SEAMEO BIOTROP, Bogor, 30 December 2019	Participant
196	Dr Irdika Mansur	Knowledge Sharing/In-house Sharing on Ex-Mining Land Reclamation Program Organized by: PT Nusantara Berau Coral, East Kalimantan	PT Nusantara Berau Coal, Kalimantan Timur, 16 - 18 January 2020	Resource Person
197	Dr Aslan	Workshop on "Unlocking the Mitigation Potential of Natural Climatel Solutions in Indonesia"	IPB International Convention Center, Bogor, 21 January 2020	Participant
198	Dr Aslan	FGD on Baseline and Strategy Framework Development for Mangrove in Coastal and Marine Sectors	Morrissey Hotel, Jakarta, 23 January 2020	Participant
199	Santi Ambarwati, MSi	Assessment of Testing Laboratory in PT Insurindo Interservices Organized by: National Accreditation Committee (KAN)	Komite Akreditasi Nasional, Cikarang, Bekasi, 23 - 24 January 2020	Assessor

200	Slamet Widodo Sugiarto, SSi	Training Course on Drone and GPS Utilization for Students Organized by: SMK Negeri 1 (STM Pembangunan) Temanggung	SMKN 1 Temanggung, Temanggung, 23 - 24 January 2020	Resource Person
201	Trijanti A. Widinni A., MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
202	Dr Sri S. Tjitrosoedirdjo	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
203	Dr Soekisman Tjitrosemito	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
204	Dr Erina Sulistiani	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
205	Yuni Puspita Sari, MM	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
206	Dewi Suryani, MM	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
207	Rima Febriana, SE, Ak	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
208	Sri Widayanti, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
209	Santi Ambarwati, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
210	Samsul A. Yani, SSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
211	Harry Imantho, MSc	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
212	Budi Cahyadi, SSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
213	Lukman Haris, SSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
214	Indah Wahyuni, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
215	Ir Ina Retnowati	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
216	Dewi Rahmawati, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant

217	Anidah, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
218	Nijma Nurfadila, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
219	Saiful Bachri, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
220	Herni Widhiastuti, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
221	Jonner Situmorang, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
222	Riana Hartati, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
223	Shella Marlinda, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
224	Armaiki Yusmur, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
225	Lillys Betty Yuliawati, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
226	Moh. Wahyu Dewanto, SHut	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
227	Zulkarnaen Noor Syarif, SKom	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
228	Sugih Mukti, AMd	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
229	Eriza Falashifa, SHut	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
230	Ulfah Zul Farisa, SHut	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
231	Rasyid Aulia Rachman, SSI	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
232	Woro Kanti Darmastuti, MSi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
233	Indra Septian, AMd	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
234	Lastiah, SE	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant



235	Puput Nisausholiha, SPi	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
236	Ismi Arsilah, SHut	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
237	Haritz Cahya Nugraha, MT	In-house Training on Training Modules Preparation and Online Training Management	SEAMEO BIOTROP, Bogor, 28 - 29 January 2020	Participant
238	Armaiki Yusmur, MSi	Seminar on Production Dynamics and Corn Export Import in Lampung Province and New and Adaptive Superior Quality Variety in Dry Acid Land	Puslitbang Tanaman Pangan, Bogor, 29 January 2020	Participant
239	M. Tajudin, MM	Socialization of Financial Application System for Institution Level (SAKTI) Year 2020	101 Darmawangsa Hotel, Jakarta, 30 January 2020	Participant
240	Rima Febriana, SE, Ak	Training Course on Writing in Mass Communication	The Jakarta Post, Jakarta, 5 - 7 February 2020	Participant
241	Dr Irdika Mansur	APEC-Tsukuba Conference XIV: Informatics and Data Science Education Reform for Digital, Inclusive and Sustainable Society	Tokyo Campus, University of Tsukuba, Tokyo, Japan, 10 - 12 February 2020	Session Organizer
242	Dr Zulhamsyah Imran	National Dialogue on Moving the Capital of the Republic of Indonesia Organized by: National Development Planning Agency (BAPPENAS)	Saleh Afif Building, Kementerian PPN/ Bappenas, Jakarta, 11 February 2020	Participant
243	Dr Irdika Mansur	National Dialogue on Moving the Capital of the Republic of Indonesia Organized by: National Development Planning Agency (BAPPENAS)	Saleh Afif Building, Kementerian PPN/ Bappenas, Jakarta, 11 February 2020	Resource Person
244	Slamet Widodo Sugiarto, SSI	Students' Competence Competition in Digital Farming 2020 Organized by: SMK Negeri 1 (STM Pembangunan) Temanggung	SMKN 1 Temanggung, Temanggung, 10 - 11 February 2020	Jury
245	Dr Aslan	Students' Competence Competition in Digital Farming 2020 Organized by: SMK Negeri 1 (STM Pembangunan) Temanggung	SMKN 1 Temanggung, Temanggung, 10 - 11 February 2020	Jury
246	Dr Zulhamsyah Imran	Climate Corner Discussion: "Sea Waste and Governmental Innovative Policy"	Manggala Wanabakti Building, Jakarta, 12 February 2020	Participant
247	Santi Ambarwati, MSi	Assessment for Surveillance 1 and Verification for Location Moving Organized by: National Accreditation Committee (KAN)	PT Sucofindo (Persero) Laboratorium, Banjarmasin Branch, Kalimantan Selatan, 12 - 14 February 2020	Assessor
248	Wati Madyawati	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
249	Yuni Puspita Sari, MM	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant

250	Dewi Suryani, MM	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
251	Syifa Fauzia, SSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
252	Lydia Ayu Utami, SSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
253	Woro Kanti Darmastuti, MSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
254	Risa Rosita, SSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
255	Siti Sulastri Rangkuty, SSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
256	Dewi Rahmawati, MSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
257	Herni Widhiastuti, SSi	In-house Training on Ecoprint	SEAMEO BIOTROP, Bogor, 11 February 2020	Participant
258	Dr Irdika Mansur	SEAMEO-The University of Tsukuba Symposium VIII "Education for Inclusive Growth on 4 <sup>th</sup> Industrial Revolution for Society 5.0"	Tokyo Campus, University of Tsukuba, Tokyo, Japan, 13 - 14 February 2020	Session organizer
259	M. Tajudin, MM	Workshop on Financial Application System for Institution Level (SAKTI) and Financial Reconciliation, January 2020	SEAMEO SEAMOLEC, Tangerang, 13 - 15 February 2020	Participant
260	Herman Apriyadi, SE	Workshop on Financial Application System for Institution Level (SAKTI) and Financial Reconciliation, January 2020	SEAMEO SEAMOLEC, Tangerang, 13 - 15 February 2020	Participant
261	Supriyatno, AMd	Workshop on Financial Application System for Institution Level (SAKTI) and Financial Reconciliation, January 2020	SEAMEO SEAMOLEC, Tangerang, 13 - 15 February 2020	Participant
262	Mulyadiana Prayoga	Training for Construction Occupational Health and Safety Officer	Yogyakarta, 17 - 22 February 2020	Participant
263	Peri Siantuni, SE	One-day Training Course on Tax	Zia Agria Hotel, Bogor, 20 February 2020	Participant
264	Deki Zulkarnain, SSos	One-day Training Course on Tax	Zia Agria Hotel, Bogor, 20 February 2020	Participant
265	Prof Dr Okky Setyawati Dharmaputra	The 6 <sup>th</sup> International Union of Microbiological Societies (IUMS) Outreach Program on Food Safety and Microbial Toxins	Universitas Gadjah Mada, Yogyakarta, 20 - 21 February 2020	Invited Speaker with paper titled: Mycotoxins in Indonesian Food and Feedstuff
266	Santi Ambarwati, MSi	The 6 <sup>th</sup> International Union of Microbiological Societies (IUMS) Outreach Program on Food Safety and Microbial Toxins	Universitas Gadjah Mada, Yogyakarta, 20 - 21 February 2020	Participant
267	Dr Irdika Mansur	Workshop on Scoping KLHS Masterplan IKN	Ayana Midplaza Hotel, Jakarta, 21 February 2020	Participant
268	Sri Widayanti, MSi	Training course on Fumigation Technique using Phosphine (PH <sub>3</sub> ) and Sulfuryl Fluoride (SO <sub>2</sub> F <sub>2</sub> ) Organized by: Association of Indonesian Pest Control Company, Regional Board of DKI Jakarta Province, ASPPHAMI Branch DKI Jakarta	Wisma Hijau, Cimanggis, Depok, 3 - 5 March 2020	Resource Person: 1. The Basics of Fumigation SO <sub>2</sub> F <sub>2</sub> 2. Fumigation Practice SO <sub>2</sub> F <sub>2</sub> 3. Fumigation Aeration SO <sub>2</sub> F <sub>2</sub>

269	Heri Yanto	Technical Training on Fumigation using Phosphine (PH <sub>3</sub> ) and Sulfuryl Fluoride (SO <sub>2</sub> F <sub>2</sub> ) Organized by: Association of Indonesian Pest Control Company, Regional Board of DKI Jakarta Province, ASPPHAMI Branch DKI Jakarta	Wisma Hijau, Cimanggis, Depok, 3 - 5 March 2020	Resource Person's assistant: 1. The Basics of Fumigation SO <sub>2</sub> F <sub>2</sub> 2. Fumigation Practice SO <sub>2</sub> F <sub>2</sub> 3. Fumigation Aeration SO <sub>2</sub> F <sub>2</sub>
270	Dr Aslan	Workshop on Mitigation Integration and Adaptation of Climate Change towards Good Governance of Peat and Mangrove Ecosystem	Ayana Midplaza Hotel, Jakarta, 3 March 2020	Participant
271	Dr Zulhamsyah Imran	Socialization of Long Distance Learning Program and Socialization of SEAMEO Center's Directors	Politeknik Elektronika Negeri Surabaya, Surabaya, 4 March 2020	Participant
272	Dr Aslan	Morning Talk Program with Theme "52 Years of SEAMEO BIOTROP: Its Track Record and Contributions to Communities" Organized by: The Radio of the Republic of Indonesia, Bogor Branch	RRI Bogor, Bogor, 4 March 2020	Resource Person
273	Rima Febriana, SE, Ak	Morning Talk Program with Theme "52 Years of SEAMEO BIOTROP: Its Track Record and Contributions to Communities" Organized by: The Radio of the Republic of Indonesia, Bogor Branch	RRI Bogor, Bogor, 4 March 2020	Resource Person
274	Tenni Wahyuni, AMd	Morning Talk Program with Theme "52 Years of SEAMEO BIOTROP: Its Track Record and Contributions to Communities" Organized by: The Radio of the Republic of Indonesia, Bogor Branch	RRI Bogor, Bogor, 4 March 2020	Resource Person
275	Fitri Junaedy, SEI	Technical Guidance on Overseas Business Travel Procedures	Amarosa Hotel, Bogor, 11 March 2020	Participant
276	Jonner Situmorang, MSi	The 2 <sup>nd</sup> Asian Agriculture & Food Forum (ASAFF) 2020 Organized by: The Ministry of Agriculture of the Republic of Indonesia, Indonesian Farmers Association, Asian Secretariate for Agriculture & Food Forum 2020	Jakarta Convention Center, Jakarta, 12 - 14 March 2020	Resource Person: Herbs from Indonesian Archipelago in the Scope of Tradition
277	Dr Sri S. Tjitrosoedirdjo	Mini Workshop with Theme "Herbarium: An Initial Step to Uncover Tropical Biodiversity"	Universitas Gajah Mada, Yogyakarta, 12 March 2020	Participant
278	Indah Wahyuni, MSi	Mini Workshop with Theme "Herbarium: An Initial Step to Uncover Tropical Biodiversity"	Universitas Gajah Mada, Yogyakarta, 12 March 2020	Participant
279	Santi Ambarwati, MSi	Reassessment for Testing Laboratory and Environmental Laboratory Organized by: National Accreditation Committee (KAN)	Laboratorium PT Karsa Buana Lestari, Jakarta, 12 - 13 March 2020	Assessor

280	Dr Irdika Mansur	Bio Expo 2020 Organized by: Biology Student Association, Biology Education Study Program, Faculty of Teacher Training and Education, Universitas Jambi, the Ministry of Education and Culture	Universitas Jambi, Jambi, 15 March 2020	Resource Person: The Role of SEAMEO BIOTROP in Biology Research and Education in the Revolution 4.0
281	Dr Supriyanto	Revitalization Program for Agricultural Vocational School: Breeding and Germination Competence Organized by: SMK Negeri 5 Jember, Education and Culture Office, East Java Provincial Government	SMK Negeri 5 Jember and Dafam Lotus Hotel, Jember, 16 - 18 March 2020	Resource Person: IoT Based Land Management: Design and Development of Integrated Agricultural System (IFS/Integrated Farming System) Surrounding SMK Negeri 5 Jember
282	Dr Irdika Mansur	National Coordination Meeting on Forest Reclamation and Watershed Rehabilitation: Greening the Earth to Prevent Natural Disaster through Watershed Rehabilitation and Forest Reclamation Organized by: Directorate General of Watershed and Protected Forest Control, the Ministry of Environment and Forestry of the Republic of Indonesia	Kementerian Lingkungan Hidup dan Kehutanan, Jakarta, 18 March 2020	Resource Person: The Most Current Technology Application on Forest Reclamation in Coal and Mineral Mining Area
283	Dr Irdika Mansur	Disclosure on Parrots and Sumba Hornbill Organized by: Manupeu Tanah Daru and Laiwangi Wanggameti National Park Center, Directorate General of Conservation of Natural Resources and Ecosystem Conservation, the Ministry of Environment and Forestry of the Republic of Indonesia	Padadita Hotel, Waingapu, Sumba Timur, 19 March 2020	Resource Person: Tree Species Identification and Development Strategy to Support the Conservation of Parrots and Sumba Hornbill
284	Zulkarnaen Noor Syarif, SKom	Seminar on Online Learning Management Organized by: SEAMEO SEAMOLEC	2 - 3 April 2020	Participant
285	Yuni Puspita Sari, MM	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
286	Woro Kanti Darmastuti, MSi	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
287	Zanne Sandriati Putri, SSi	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant

288	Sri Ismawati Soerianegara, MSc	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
289	Rima Febriana, SE, Ak	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
290	Rizkia Tirtani	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
291	Puput Nisausholiha, SPi	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
292	Tenni Wahyuni, AMd	Webinar on Tips for Developing Public Speech Ability as a Basis for Public Speaking Organized by: SEAMEO CECCEP	4 May 2020	Participant
293	Dr Irdika Mansur	Online Seminar on Post Mining Reclamation	6 May 2020	Resource Person
294	Dr Irdika Mansur	Online Seminar on Understanding Urban Farming	8 May 2020	Resource Person
295	Dr Zulhamsyah Imran	Fisheries Agribusiness Online Training: Indonesian Vocational Teacher Creative Camp 2020	8 May 2020	Resource Person: Hatchery and Enlargement of Freshwater Shrimp
296	Shella Marlinda, MSi	Fisheries Agribusiness Online Training: Indonesian Vocational Teacher Creative Camp 2020	9 May 2020	Resource Person: Hatchery and Enlargement of Freshwater Shrimp
297	Dewi Rahmawati, MSi	Potential of Indonesian Local Plant Genetic Resources to Overcome Covid-19 Organized by: ICTS (Innovation Center for Tropical Science)	10 May 2020	Participant
298	Armaiki Yusmur, MSi	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
299	Rima Febriana, SE, Ak	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant

300	Tenni Wahyuni, AMd	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
301	Yuni Puspita Sari, MM	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
302	M. Tajudin, SE, MM	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
303	Devi Septrianti, SE	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
304	Eko Purwiyanto	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
305	Lillys Betty Yuliawati, SSI	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
306	Woro Kanti Darmastuti, MSi	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
307	Sri Ismawati Soerianegara, MSc	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
308	Rizkia Tirtani	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
309	Puput Nisausholiha, SPi	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant

310	Andriansyah	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
311	Dika Zulkarnaen, SSI	Capacity Building for Employees among 7 SEAMEO Centres Indonesia: Webinar on Tips and Tricks in Using Microsoft Excel Organized by: SEAMEO QITEP in Science	11 May 2020	Participant
312	Riana Hartati, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Hydroponic	12 May 2020	Resource Person: Introduction (Definitions, advantages and disadvantages of hydroponics, a general introduction of hydroponics and sharing photographs)
313	Shella Marlinda, MSi	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Aquaculture	12 May 2020	Resource Person: Introduction (Definition, types of aquaculture, aquaculture techniques)
314	Ir Ina Retnowati	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
315	Nijma Nurfadila, SSI	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
316	Dewi Rahmawati, MSi	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
317	Nijma Nurfadila, SSI	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
318	Anidah, SSI	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
319	Dewi Rahmawati, MSi	Webinar on Covid Early Detection: Rapid Test and Swab Test Organized by: UNIKA Atmajaya	12 May 2020	Participant
320	Nijma Nurfadila, SSI	Webinar on Food and Food Technology to Enhance Immunity Organized by: UNIKA Atmajaya	12 May 2020	Participant
321	Dewi Rahmawati, MSi	Webinar on Horticulture Business after Covid-19	12 May 2020	Participant

322	Anidah, SSi	SCIEX Webinar Series LC-MS/MS Method for Halal Testing and Gelatin Screening Organized by: SCIEX & PT. ALPHASAINS DINAMIKA	12 May 2020	Participant
323	Dr Zulhamsyah Imran	Webinar Knowledge Sharing Series: Management of Small Tropical Islands	13 May 2020	Resource Person
324	Dewi Rahmawati, MSi	Webinar on The Art of Patent Drafting Organized by: Indonesian Institute of Sciences (LIPI)	13 May 2020	Participant
325	Anidah, SSi	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
326	Rima Febriana, SE, Ak	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
327	Tenni Wahyuni, AMd	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
328	Sri Ismawati Soerianegara, MSc	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
329	Lidia Defita, SKom	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
330	Rizkia Tirtani	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
331	Puput Nisausholiha, SPi	Webinar on Introduction to Electronic Signs and Practices for Use at SEAMEO RECFON Organized by: SEAMEO RECFON	13 May 2020	Participant
332	Riana Hartati, SSi	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Hydroponic	13 May 2020	Resource Person: Planting Media Technique
333	Shella Marlinda, MSi	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Aquaculture	13 May 2020	Resource Person: Seeding



334	Dr Erina Sulistiani	Knowledge Sharing Organized by: PT Pupuk Kalimantan Timur	13 May 2020	Resource Person: Provision of Cottonii Seaweed Seedlings using Tissue Culture
335	Armaiki Yusmur, MSi	Webinar on Building Research Funding	14 May 2020	Participant
336	Dika Zulkarnaen, SSI	Webinar on Preparing for Future Trends in Trace Elemental Analysis Organized by: PT GeneCraft Labs	14 May 2020	Participant
337	Andriansyah	Webinar on Preparing for Future Trends in Trace Elemental Analysis Organized by: PT GeneCraft Labs	14 May 2020	Participant
338	Samsul A. Yani, SSI	Online Seminar on Urban Farming Part 2	14 May 2020	Resource Person: Edible Mushrooms Cultivation
339	Rima Febriana, SE, Ak	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
340	Tenni Wahyuni, AMd	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
341	Lukman Haris, SSI	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
342	M. Tajudin, SE, MM	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
343	Fitri Junaedy, SEI	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
344	Sri Ismawati Soerianegara, MSc	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
345	Rizkia Tirtani	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
346	Riana Hartati, SSI	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant

347	Fitri Junaedy, SEI	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
348	Haritz Cahya Nugraha, MT	Webinar on Tips and Tricks to Make Presentations Organized by: SEAMEO SEAMOLEC	14 May 2020	Participant
349	Dewi Rahmawati, MSi	Webinar on Tips and Success of LPK Accredited by KAN Organized by: National Standardization Agency of Indonesia (BSN)	14 May 2020	Participant
350	Dewi Rahmawati, MSi	Webinar on Waste Management with The Concept of Masaro (Zero Waste Management) Organized by: Center for Environmental Studies, Institut Teknologi Bandung (ITB)	14 May 2020	Participant
351	Armaiki Yusmur, MSi	Webinar on Waste Management with The Concept of Masaro (Zero Waste Management) Organized by: Center for Environmental Studies, Institut Teknologi Bandung (ITB)	14 May 2020	Participant
352	Dewi Rahmawati, MSi	Webinar on Effective Aesthetics and Effective Nutrition for Hydroponics and Verticulture of Vegetable Plants Organized by: PT Primakelola, Institut Pertanian Bogor (IPB-Bogor Agricultural University-)	14 May 2020	Participant
353	Anidah, SSI	Webinar on Scientific Journal Writing	14 May 2020	Participant
354	Anidah, SSI	Webinar on Post Covid Sanitation and Hygiene	14 May 2020	Participant
355	Anidah, SSI	Webinar: Halal Food Industry Post Covid-19 Organized by: Department of Food Science and Technology and Directorate of International Program, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	14 May 2020	Participant
356	Lidia Defita, SKom	Management of Official Script Organized by: SEAMEO Qitep in Language	14 May 2020	Participant
357	Rizkia Tirtani	Management of Official Script Organized by: SEAMEO Qitep in Language	14 May 2020	Participant
358	Riana Hartati, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Hydroponic	14 May 2020	Resource Person: How to Start Hydroponics

359	Shella Marlinda, MSi	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Aquaculture	14 May 2020	Resource Person: Harvesting of Aquaculture Products
360	Dika Zulkarnaen, SSI	Webinar on Preparing for Future Trends in Trace Elemental Analysis Organized by: PT. GeneCraft Labs	14 May 2020	Participant
361	Andriansyah	Webinar on Preparing for Future Trends in Trace Elemental Analysis Organized by: PT. GeneCraft Labs	14 May 2020	Participant
362	Riana Hartati, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Hydroponic	15 May 2020	Resource Person: Maintenance to Harvesting
363	Shella Marlinda, MSi	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Aquaculture	15 May 2020	Resource Person: Introduction to Feed
364	Zulkarnaen Noor Syarif, SKom	Webinar on Data Science, Data + Machine Learning Algorithm Organized by: Indonesian Informatics Expert Association	18 May 2020	Participant
365	Anidah, SSI	Webinar on Publishing Manuscript in Peer-Reviewed International Journal Organized by: Association of Indonesian Food Technology Experts (PATPI)	18 May 2020	Participant
366	Anidah, SSI	Webinar on Hygiene and Sanitation in Food Industry for Preventing Covid-19 Organized by: SEAFASST CENTER, LPPM, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	18 May 2020	Participant
367	Armaiki Yusmur, MSi	Webinar on Aerial intelligence: Solutions to Manage Your Mine Organized by: PT. Carsurin	19 May 2020	Participant
368	Armaiki Yusmur, MSi	Webinar on Management of Acid Mine Water with the Passive Method	19 May 2020	Participant
369	Dr Irdika Mansur	Webinar on Utilization of Essential Oils in Handling Covid-19	20 May 2020	Resource Person
370	Santi Ambarwati, MSi	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Resource Person: Good Practices Implementation according to ISO 9001: 2015
371	Harry Imantho, MSc	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Moderator

372	Ir Ina Retnowati	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
373	Rima Febriana, SE, Ak	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
374	Zanne Sandriati Putri, SSI	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
375	Sri Ismawati Soerianegara, MSc	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
376	Dewi Rahmawati, MSi	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
377	Zulkarnaen Noor Syarif, SKom	Capacity Building for Employees among 7 SEAMEO Centres Indonesia on ISO Certification Organized by: SEAMEO BIOTROP	20 May 2020	Participant
378	Dewi Rahmawati, MSi	Webinar on High Nourishing Vegetable Cultivation Organized by: Primakelola, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	20 May 2020	Participant
379	Woro Kanti Darmastuti, MSi	Webinar on Documents Management Organized by: Data Script	20 May 2020	Participant
380	Zulkarnaen Noor Syarif, SKom	Webinar on Data Science: Data Understanding dan Data Preparation Organized by: Indonesian Informatics Expert Association	20 May 2020	Participant
381	Dr Zulhamsyah Imran	Sharing Session III Knowledge Sharing Series: Management of Small Tropical Islands	20 May 2020	Resource Person: Ecosystem Approach in Indonesian Small Scale Fisheries
382	Ir Ina Retnowati	Webinar on Indonesian Mushroom Diversity Status: A Necessity for Activists of Mycology Organized by: Indonesian Mycological Society	21 May 2020	Participant

383	Nijma Nurfadila, SSi	Webinar on Indonesian Mushroom Diversity Status: A Necessity for Activists of Mycology Organized by: Indonesian Mycological Society	21 May 2020	Participant
384	Zulkarnaen Noor Syarif, SKom	Application of Text Mining in the Industrial World and Government Organized by: Indonesian Informatics Expert Association	22 May 2020	Participant
385	Harry Imantho, MSc	Focus Group Discussion on Development of Dynamic and Spatial Dynamic System Integration Models for Covid-19 Countermeasures Organized by: Geospatial Information Agency	27 May 2020	Resource Person: Review of Development Methods for Dynamic Spatial Models for Handling of Covid-19
386	Santi Ambarwati, MSi	Webinar on Understanding SNI ISO/IEC 17025:2017 Organized by: National Accreditation Committee (KAN)	27 May 2020	Participant
387	Risya Ayu Astari, AMd	Webinar on Understanding SNI ISO/IEC 17025:2017 Organized by: National Accreditation Committee (KAN)	27 May 2020	Participant
388	Mutiara Hidayat, SSi	Webinar on Understanding SNI ISO/IEC 17025:2017 Organized by: National Accreditation Committee (KAN)	27 May 2020	Participant
389	Syifa Fauzia, SSi	Webinar on Understanding SNI ISO/IEC 17025:2017 Organized by: National Accreditation Committee (KAN)	27 May 2020	Participant
390	Irma Indriani Hermawan, SSi	Webinar on Understanding SNI ISO/IEC 17025:2017 Organized by: National Accreditation Committee (KAN)	27 May 2020	Participant
391	Ir Ina Retnowati	Webinar on Diversity of Moist Tropical Forest Organisms Organized by: Department of Biology, Faculty of Mathematics and Natural Sciences, Universitas Mulawarman	30 May 2020	Participant
392	Zulkarnaen Noor Syarif, SKom	Webinar on IoT Technology in the Robotic World Organized by: Indonesian Informatics Expert Association	1 June 2020	Participant
393	Armaiki Yusmur, MSi	Webinar on Regarding The Use of Mining Ponds for Other Uses	2 June 2020	Participant
394	Dr Erina Sulistiani	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Plant Tissue Culture	2 June 2020	Resource Person: Tissue Culture Techniques for Plant Seed Production

395	Dr Erina Sulistiani	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Plant Tissue Culture	3 June 2020	Resource Person: Stages of Micropropagation for Propagation of Plant Seedlings
396	Zulkarnaen Noor Syarif, SKom	Webinar on Augmented and Virtual Reality in IoT: Trend and Challenges Organized by: Indonesian Informatics Expert Association	3 June 2020	Participant
397	Dr Erina Sulistiani	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Plant Tissue Culture	4 June 2020	Resource Person: Facilities for Plant Tissue Culture and Aseptic Techniques
398	Dr Erina Sulistiani	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Plant Tissue Culture	5 June 2020	Resource Person: Composition of Plant Tissue Culture Media
399	Indah Wahyuni, MSi	Joint Webinar on World Environment Day: Covid-19 Effects on Biodiversity: Science Education Reimagined Organized by: SEAMEO – UNESCO	5 June 2020	Participant
400	Dr Sri S. Tjitrosoedirdjo	Joint Webinar on World Environment Day: Covid-19 Effects on Biodiversity: Science Education Reimagined Organized by: SEAMEO – UNESCO	5 June 2020	Resource Person: The Challenges of Studying Biodiversity in Indonesia (Cases of Invasive Alien Plant Species)
401	Herni Widhiastuti, SSi	Webinar on Potential Utilization of Essential Oils as Pests Control Organized by: Indonesian Spice and Medicinal Crops Research Institute (Balitro)	5 June 2020	Participant
402	Trijanti A. Widinni Asnan, MSi	Webinar on Potential Utilization of Essential Oils as Pests Control Organized by: Indonesian Spice and Medicinal Crops Research Institute (Balitro)	5 June 2020	Participant
403	Sri Widayanti, MSi	Webinar on Potential Utilization of Essential Oils as Pests Control Organized by: Indonesian Spice and Medicinal Crops Research Institute (Balitro)	5 June 2020	Participant
404	Zulkarnaen Noor Syarif, SKom	IoT: Bringing Blessings or Disasters Organized by: Indonesian Informatics Expert Association	5 June 2020	Participant
405	Zulkarnaen Noor Syarif, SKom	The APTIKOM Webinar Series 02: Artificial Intelligence and Machine Learning: Model and Implementation Organized by: Association of Higher Education on Informatics and Computer Science (APTIKOM)	6 June 2020	Participant

406	Samsul A. Yani, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Edible Mushroom Cultivation	8 June 2020	Resource Person: Introduction to Edible Mushroom Cultivation
407	Samsul A. Yani, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Edible Mushroom Cultivation	9 June 2020	Resource Person: Making Mushroom Seeds F0 and F1
408	Zulkarnaen Noor Syarif, SKom	Webinar on the Potential of Using Artificial Intelligence to Prevent the Spread of Covid-19 Organized by: Computer Sciences Study Program, Faculty of Mathematics and Natural Sciences, Universitas Halu Oleo	9 June 2020	Participant
409	Armaiki Yusmur, MSi	Webinar on Simon Bageol Organized by: The Ministry of Energy and Mineral Resources (ESDM) and Indonesian Communication Forum for Mining Environmental Management (FKPLPI)	9 June 2020	Participant
410	Santi Ambarwati, MSi	Webinar on World Accreditation Day: Accreditation support in improving food safety Organized by: National Accreditation Committee (KAN)	9 June 2020	Participant
411	Dewi Rahmawati, MSi	Webinar on Indonesian Immunity vs. New Normal Organized by: Indonesian National Student Movement (GMNI), Institut Pertanian Bogor (IPB-Bogor Agricultural University)	10 June 2020	Participant
412	Dr Erina Sulistiani, MSi	Webinar on Tissue Culture Seed Technology and Business	10 June 2020	Participant
413	Dr Aslan	Webinar on Mangrove Protection Organized by: The Ministry of Environment dan Forestry of the Republic of Indonesia	10 June 2020	Participant
414	Santi Ambarwati, MSi	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
415	Irma Indriani Hermawan, SSI	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant

416	Ernovia Dwi Astuti	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
417	Gita Hanipah, SSI	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
418	Budi Cahyadi, SSI	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
419	Dika Zulkarnaen, SSI	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
420	Andriansyah	Webinar on the Existence of Environmental Laboratories in the New Normal Order in the Covid-19 Era Organized by: Center for Research and Development on Environmental Quality and Laboratory, the Ministry of Environment and Forestry of the Republic of Indonesia	10 June 2020	Participant
421	Sri Widayanti, MSi	One Day Dissemination on Biosensors and Biodiversity Protection Organized by: Indonesian Agricultural Quarantine Agency, the Ministry of Agriculture of the Republic of Indonesia	10 June 2020	Participant
422	Samsul A. Yani, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Edible Mushroom Cultivation	10 June 2020	Resource Person: Making F1 and F2 Mushroom Seeds
423	Zulkarnaen Noor Syarif, SKom	Webinar on Unlock One SPBE Data Organized by: Indonesian Informatics Expert Association	10 June 2020	Participant



424	Dewi Rahmawati, MSi	Webinar on Advanced Tissue Culture for Industrial and Ornamental Plants Organized by: Merck & Co., Inc.	11 June 2020	Participant
425	Dewi Rahmawati, MSi	Webinar on Production and Agronomy of Plant Sources of Non-Rice Carbohydrates to Support Carbohydrate Diversification and Exports Organized by: Department of Agronomy and Horticulture, Faculty of Agriculture, Institut Pertanian Bogor (IPB-Bogor Agricultural University)	11 June 2020	Participant
426	Riana Hartati, SSI	Urban Farming Part 3	11 June 2020	Resource Person: Hydroponic Technique
427	Ratnaningsih, SSI	Getting the Most out of Your Agilent HPLC Organized by: PT Berca Niaga Medika	11 June 2020	Participant
428	Syifa Fauzia, SSI	Getting the Most out of Your Agilent HPLC Organized by: PT Berca Niaga Medika	11 June 2020	Participant
429	Samsul A. Yani, SSI	Online Training Series on Application of Urban Agriculture in Support of Family Food Security: Edible Mushroom Cultivation	11 June 2020	Resource Person: F3 Mushroom Seed Making and Harvest Processing
430	Dr Irdika Mansur	Webinar: MASSITalks Series 1: Increased Productivity of Forests and Degraded Land in Indonesia	12 June 2020	Resource Person: Utilization of Puti Wood Trees ( <i>Melaleuca leucadendra</i> ) in Post Mining Land
431	Ir Ina Retnowati	Webinar on Recognizing and Arranging Basidiomycetes for Indonesian Fungus Biodiversity: Basidiomycetes in the Latest Fungal Arrangements Organized by: Indonesian Mycological Society	12 June 2020	Participant
432	Nijma Nurfadila, SSI	Webinar on Recognizing and Arranging Basidiomycetes for Indonesian Fungus Biodiversity: Basidiomycetes in the Latest Fungal Arrangements Organized by: Indonesian Mycological Society	12 June 2020	Participant
433	Dewi Rahmawati, MSi	Webinar on Recognizing and Arranging Basidiomycetes for Indonesian Fungus Biodiversity: Basidiomycetes in the Latest Fungal Arrangements Organized by: Indonesian Mycological Society	12 June 2020	Participant
434	Zulkarnaen Noor Syarif, SKom	Webinar on Terms for SPBE Application Failure Organized by: Indonesian Informatics Expert Association	12 June 2020	Participant

435	Sri Widayanti, MSi	Webinar on National Policy for Controlling Corn Grayak Caterpillar ( <i>Spodoptera frugiperda</i> ) Organized by: Entomological Society of Indonesia	13 June 2020	Participant
436	Trijanti A. Widinni A., MSi	Webinar on National Policy for Controlling Corn Grayak Caterpillar ( <i>Spodoptera frugiperda</i> ) Organized by: Entomological Society of Indonesia	13 June 2020	Participant
437	Trijanti A. Widinni A., MSi	Webinar on Pest Control of Oil Palm Fruit Borer (UPBKS) Organized by: PT Nufarm Indonesia	15 June 2020	Participant
438	Sri Widayanti, MSi	Webinar on Pest Control of Oil Palm Fruit Borer (UPBKS) Organized by: PT Nufarm Indonesia	15 June 2020	Participant
439	Zulkarnaen Noor Syarif, SKom	Webinar on Becoming Game Creator in the 4.0 Industrial Era Organized by: Indonesian Informatics Expert Association	15 June 2020	Participant
440	Ir Ina Retnowati	Webinar on Recognizing and Arranging Basidiomycetes for Indonesian Fungal Diversity: Macro Agaricomycotina-Basidiomycetes Organized by: Indonesian Mycological Society	17 June 2020	Participant
441	Nijma Nurfadila, SSI	Webinar on Recognizing and Arranging Basidiomycetes for Indonesian Fungal Diversity: Macro Agaricomycotina-Basidiomycetes Organized by: Indonesian Mycological Society	17 June 2020	Participant
442	Zulkarnaen Noor Syarif, SKom	Webinar: Games in an Era 4.0: Trends and Developments Organized by: Indonesian Informatics Expert Association	17 June 2020	Participant
443	Zulkarnaen Noor Syarif, SKom	Webinar: How to Design a Game? Organized by: Indonesian Informatics Expert Association	19 June 2020	Participant
444	Sri Widayanti, MSi	Webinar on Utilization of Bees in Plantation Commodities Organized by: Directorate General of Plantation, the Ministry of Agriculture of the Republic of Indonesia	19 June 2020	Participant

445	Herni Widhiastuti, SSi	Webinar on Utilization of Bees in Plantation Commodities Organized by: Directorate General of Plantation, the Ministry of Agriculture of the Republic of Indonesia	19 June 2020	Participant
446	Zulkarnaen Noor Syarif, SKom	The APTIKOM Webinar Series 03: Deep Learning: Concept, Model, Algorithm and Applications Organized by: Association of Higher Education on Informatics and Computer Science (APTIKOM)	20 June 2020	Participant
447	Dr Supriyanto	MASSI Talks Series II: Community Forest Development as a Covid-19 Disaster Mitigation Effort	22 June 2020	Resource Person
448	Dewi Rahmawati, MSi	Webinar on Development of Community Forests as Covid-19 Disaster Mitigation Efforts Organized by: Indonesian Silvicultural Society (MASSI)	22 June 2020	Participant
449	Anidah, SSi	Webinar on The Role of Halal Standards in Halal Certification Organized by: Indonesia Halal Training & Education Center (IHATEC)	22 June 2020	Participant
450	Dewi Rahmawati, MSi	Webinar on Potential Industrial Oil Plants as Raw Materials For Pharmaceutical and Functional Food Industries Organized by: Indonesian Sweetener and Fiber Crops Research Institute, the Ministry of Agriculture of the Republic of Indonesia (Balittas)	23 June 2020	Participant
451	Dewi Rahmawati, MSi	Webinar on Replanting Technique in Ganoderma Endemic Land Organized by: Best Planter Indonesia (BPI)	23 June 2020	Participant
452	Dewi Rahmawati, MSi	The Role of Circular Economy Standards for Business Continuity and Environmental Sustainability Organized by: National Standardization Agency of Indonesia (BSN)	24 June 2020	Participant
453	Ir Ina Retnowati	Webinar on Morphological Description of Basidiomycetes and Introduction to Russuloid Organized by: Indonesian Mycological Society	24 June 2020	Participant
454	Nijma Nurfadila, SSi	Webinar on Morphological Description of Basidiomycetes and Introduction to Russuloid Organized by: Indonesian Mycological Society	24 June 2020	Participant

455	Dr Supriyanto	World Day on Combating Desertification (WDCD) 2020 Organized by: The Ministry of Environment and Forestry of the Republic of Indonesia	24 June 2020	Resource Person: Agroforestry as a Labor Intensive Program in Fulfillment of Food, Feed and Fiber
456	Zulkarnaen Noor Syarif, SKom	Webinar on LMS Concept: Ideal, Principles, Flow, Structure, Platform, and Not Just E-Material (Moodle VS Chamilo) Organized by: Indonesian Informatics Expert Association	24 June 2020	Participant
457	Drs. Jonner Situmorang, MSi	Webinar on HPIP Health Services Organized: HPIP	25 June 2020	Resource Person: Entrepreneurship of Essential Oil and Its Derivative Products: Perfume, Aromatherapy, Freshcare and Massage Oil
458	Ratnaningsih, SSi	Webinar on the Role of Functional Food and Nutrition in Improving the Immune System to Prevent Covid-19 Organized by: Indonesian Center for Agricultural Post Harvest Research and Development, the Ministry of Agriculture of the Republic of Indonesia (Balai Besar Pasca Panen)	25 June 2020	Participant
459	Syifa Fauzia, SSi	Webinar on the Role of Functional Food and Nutrition in Improving the Immune System to Prevent Covid-19 Organized by: Indonesian Center for Agricultural Post Harvest Research and Development, the Ministry of Agriculture of the Republic of Indonesia (Balai Besar Pasca Panen)	25 June 2020	Participant
460	Slamet Widodo Sugiarto, SSi	Webinar on Smart Agriculture by Utilizing Remote Sensing Technology Organized by: National Institute of Aeronautics and Space (LAPAN)	26 June 2020	Participant
461	Slamet Widodo Sugiarto, SSi	Webinar on Precision Farming Organized by: PT AGRICON	26 June 2020	Participant
462	Riana Hartati, SSi	Webinar on School Gardens to Support STEM and Build Student Character	26 June 2020	Resource Person: Hydroponics
463	Harry Imantho, MSc	Webinar on Bincang Inderaja: How Satellites Monitor Rice Planting Activities in the Covid-19 Pandemic Era; and Concept and Application of Sustainable Smart Farming Organized by: National Institute of Aeronautics and Space (LAPAN)	26 June 2020	Participant

464	Santi Ambarwati, MSi	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
465	Eko Purwiyanto	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
466	Budi Cahyadi, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
467	Ratnaningsih, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
468	Fitri Hanifah	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
469	Ernovia Dwi Astuti	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
470	Gita Hanipah, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant

471	Irma Indriani Hermawan, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
472	Mutiara Hidayat, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
473	Siti Sulastri, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
474	Risya Ayu Astari, AMd	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
475	Lidya Ayu Utami, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
476	Andriyansyah	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
477	Dika Zulkarnaen, SSI	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant

478	Achmad Syuhada, SSi	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
479	Mahpudin	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
480	Philena Nisivian	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
481	Nopi Ramli	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
482	Drs Agung Mustopa	Webinar on KAN policies related to Anticipating the Impact of the Covid-19 Pandemic and Remote Assessment Protocols for Testing Laboratories Organized by: National Accreditation Committee (KAN), National Standardization Agency of Indonesia (BSN)	26 June 2020	Participant
483	Zulkarnaen Noor Syarif, SKom	Learning Management System (LMS): Creating/Solving the Problem? Organized by: Indonesian Informatics Expert Association	26 June 2020	Participant
484	Dr Zulhamsyah Imran	Webinar on School Gardens to Support STEM and Build Student Character	26 June 2020	Resource Person
485	Lillys Betty Yuliawati, SSi	Webinar on Licensing for Horticultural Seed Exports in the Pandemic Era Organized by: Indonesian Centre for Plant Variety Protection and Agricultural Licensing, the Ministry of Agriculture of the Republic of Indonesia	26 June 2020	Participant

486	Dr Aslan	The 1 <sup>st</sup> Quarterly Online Public Seminar	29 June 2020	Resource Person: The Urgent Study of Mapping and Analysis of Peatlands in Indonesia Using Active and Passive Satellite Imagery in Support of Low Carbon Development
487	Zulkarnaen Noor Syarif, SKom	Webinar on Adaptation to Cyber Security in the Perspective of the New Life Order Organized by: Indonesian Informatics Expert Association	29 June 2020	Participant
488	Dewi Rahmawati, MSi	Webinar The Future is Digital: QIAGEN Digital PCR System is Accelerating the Advance in Translational Genetics Organized by: PT. GeneCraft Labs	30 June 2020	Participant
489	Dewi Rahmawati, MSi	Online Technical Guidance: Healthy Living with Rice-Based Functional Foods Organized by: Indonesian Center for Rice Research, Indonesian Agency for Agricultural Research and Development, the Ministry of Agriculture of the Republic of Indonesia	30 June 2020	Participant



## Appendix 7. Photos of Work Activities in the period of July 2019 – June 2020



## Appendix 8.

### List of laboratory equipment purchased in the period of July 2019 - June 2020

No	Laboratory equipment	Specification	Purchased Amount	Designated laboratory	Sender	Receiver	SIMAK BMM Officer
1	Freezer	Freezer 5 Racks, Top Table, Paint Coating Body, 121 L, 80 - 120 W	1	Food and Feed Laboratory			
2	Pipette Pipetman	Capacity 1 mL, Stainless steel piston, PVDF handle.	1	Water and Air Laboratory			
3	Pipette Pipetman	Capacity 100 µL - 1000 µL, Stainless steel piston, PVDF handle.	1	Water and Air Laboratory			
4	Optical Gas Indicator	Measuring principle: Optical interferometric method, Measuring gas: Sulfuryl Fluoride. Indication accuracy: Within $\pm 3\%$ (at constant temperature), Type: Type-P, Sampling method: pump suction type, self-diagnosis function: Low battery, Low light, Low contrast, abnormal atmospheric pressure and abnormal temperature, Display: LCD digital (7-segment value display + code + 20 segment word x 2 lines), Each display: Measuring gas, gas concentration, measuring unit and battery capacity reminder, Power Source: Alkaline battery pack (AA size battery x 3 pcs) (standard), Ingress proof rating: IP67 equivalent, Ambient humidity and temperature: Temperature range: $-20 \sim 50$ °C, Humidity: Below 95% RH (Non-condensing), Explosion proof: TIIS/ATEX/IECEx, Continuous operation: Above 12 hrs (for alkaline battery use), Above 18 hrs (for lithium ion battery use) (25 °C with no back light on), External output: IrDA (for data logging), Functions: data logging, atmospheric pressure correction, temperature compensation	1	Entomology Laboratory			
5	ULV Cold Fogging Machine	ULV (Ultra Low Volume) is a misting/condensing machine for indoor and outdoor application for chemical insecticides, public health, disinfectant, deodorizer, fungicides, odor neutralizer, poultry vaccines. This ULV application can be accompanied with the use of water/oil solvent (white oil). The specifications of ULV are: - Dimension: 36 cm x 29 cm x 44 cm - Net weight: 3.5 kg - Gross weight: 4 kg - Voltage: 220/240 volt AC, 3.5 Amp, 50/60 Hz - Wattage: 1000 watt	1	Entomology Laboratory			
6	Distillator	SPECIFICATIONS : * Output Water : 4 L/hour * pH: 5.5 - 6 ( 5.5 s/d 6 ) * Power Suply: Single phase 220 - 240 V; 50/60 Hz, 3 kW * Metal case cover for precaution * 90° valve for boiler easy cleaning * Over heat protection with Sunvic Thermostat	1	Tissue Culture Laboratory			

7	Magnetic stirrer + hot plate	Product Size Each; Speed 50 to 1,500rpm; Temperature Range (Metric) 540 °C (Max Temperature) Surface Area (English) Heating 4.25 x 4.25 in. Surface Area (Metric) Heating 10.8 x 10.8 cm Top Plate Material Ceramic Voltage 230 V; Hertz 50/60Hz Certifications/Compliance cCSAus, CE Includes 3 power cords Shipping Weight (English) 8.4 lb. Shipping Weight (Metric) 3.8kg Stirring Range 50 to 1,500 rpm Electrical Requirements 230 V 50/60 Hz Maximum Temperature (Metric) 540 °C Warranty 3 years Type Hotplates and Stirrers	1	Tissue Culture Laboratory
8	Pipette Pipetman	Capacity: 1 mL, Stainless steel piston, PVDF handle.	1	Tissue Culture Laboratory
9	Laboratory tables and chairs	Laboratory Table Specifications: Dimension (p x l x t): 200 x 90 x 80 cm Material: Multiplex 18 mm Finishing: Lapis HPL Include kabinet & melamine drawers Table top: Plenolic resin 12 mm (chemical and acid resistant and without wooden joints). Completed with tools drawers. Completed with 2 units electric socket for electricity installation.	1	Biotechnology Laboratory
	Laboratory chair	Specifications: - Dimension (PxLxT): 34 x 34 x (43 - 55) cm - Frame: Nylon - Cushion: Foam with false waterproof leather cover, diameter 30 cm - Chair height: Flexible, can be adjusted with body height. - Wheeled chair legs	2	
10	Chest Freezer	Power Duo (Freezing & Cooling) Heavy Duty Compressor Adjustable Thermostat Color: White Capacity: 200 L Completed with 1 basket Active Deodorizer Thermostat Wattage:130 W Dimension: (PxLxT) : 83 x 60 x 101 cm Weight : 45000 g	1	Biotechnology Laboratory

11	Rotary Wing Drone	<p>Rotary Wing Drone  Flight Time: 30 minutes;  Noise Reduction: 4dB  Video Resolutions: 4K  Control Range: 7 KM  Gimbal: 3-Axis  Camera Resolution: 12 MP  <u>Accessories:</u>  1 x Drone  1 x Controller  3 x pcs Battery  1 x Unit Charger  6 x propellers  1x Shoulder Bag  1x Unit Charger Hub  1x Unit Car Charger  RC Cable I-phone, android &amp; USB C  Compatible with software Drone Deploy</p>	1	Remote Sensing Laboratory
12	Ocean Optics TP300-Series Transmission Probes-VIS-NIR	<p>300-micron Transmission Dip Probe, VIS, PEEK sleeve-VIS-NIR, Compatible with Spektro</p>	1	Remote Sensing Laboratory
13	Soil Moisture Meter	<p>Measurement Range 0 % to 50 % moisture content on soil; Resolution 0.1 %.; Accuracy (5% F.S.+ 5 d) @ 23 5 , F.S.: full scale; Applications Designed to check the moisture level of soil or other similar material; Measuring Principal Used the 2 pins electrode to measure the conductive ability of the species, then converter to the reading of " % " Moisture content " of soil sample; Display LCD size: 28 x 19 mm; Circuit Probe Custom one-chip of microprocessor LSI circuit. 2 pins moisture electrode; Data Hold Freeze the display reading; Sampling Time Approximate: 0.8 second; Operating Temperature: 0 to 50 °C; Operating Humidity Less than 80% R.H; Power Supply DC 1.5 V battery AAA x 4 PCs; Probe body: 220 x Diameter 10 mm (8.7" x Diameter 0.4"); Total length (meter + probe) : 392 mm (15.4").</p>	1	Remote Sensing Laboratory
14	Survey Camera 3W	<p>Image resolution: 12MP;  Video resolution: 2160p24, 1440p30, 1080p60, 720p60; Ground Sample Distance (GSD): 5.5 cm/px (2.17in/px) at 120 m (~400 ft) AGL;  Sensor: Sony Exmor R IMX117 12MP (Red+Green+NIR (RGN, NDVI));  Battery: Removable Li-ion (1200mAh);  Memory Storage: Micro SD (Up To 128GB Card) (64GB Card ≈15,000 JPG, 2,200 RAW+JPG);  White Balance: Auto / Daylight / Cloudy / Tungsten / Fluorescent / Blue / Light Blue / Red / Light Red / Custom*  ISO: 50* / 100 / 200 / 400, Auto  Compatible with DJI Phantom 4 Pro  Included Accessories: USB GPS Reciver, Baterry, Lens Cap, USB Charge Cable, Manual</p>	1	Remote Sensing Laboratory

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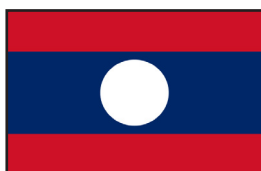
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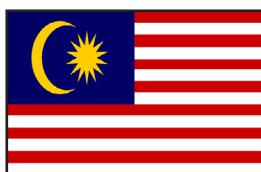
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