

BIOTROP Courier



BIOTROP Shares Geospatial Knowledge to SMARTS-BE Program Participants

BIOTROP Formulates the Concept of Agro-Eco-Edu Tourism Program

BIOTROP Director Talks Over the Potential of Cajuput Trees in Post-Mining Land Reclamation



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Director's Message

Dear Valued Readers,

For the third quarter of 2020, our Centre kept on continuing its activities to provide scientific knowledge, products and services to beneficiaries, not only for Indonesian people, but also for the Southeast Asian community. Still, due to the Covid-19 pandemic, our Centre prioritized to conduct online activities instead of face-to-face activities. Other than contributed to enhance skills and capabilities of the external beneficiaries, the Centre also organized activities to develop its internal human resources.

Series of Webinar on SMARTS-BE Program Talks and online Training Course on Urban Agriculture were conducted during July to August 2020 and participated by students, teachers, researchers and communities. The Centre also conducted an online training course on Geodatabase Management of Monitoring and Diagnostic Application System for Plant Pests and Diseases on 10 – 13 August 2020. The training method is interesting, since the participants had to join live streaming on practice session by the resource person; demonstrated the use of drones and other GIS and Remote Sensing equipment, at the field.

Since the occurrence of Covid-19 pandemic, learning activities were mostly conducted by online platform. Thus, the Centre developed its human resource capability in producing educational video, by organizing an in-house training course on Educational Video Production on 6 – 13 July 2020. To assure the quality of management system, our Centre also conducted internal surveillance on ISO 9001:2015.

The Centre has a long-term plan to establish an Agro-Eco-Edu-Tourism Program. As the initial activity, the Centre organized a Focus Group Discussion to formulate the concept of SEAMEO BIOTROP Agro-Eco-Edu-Tourism Program on 25-27 August 2020. This program will be implemented in collaboration with Institut Pertanian Bogor (Bogor Agricultural University-IPB) and private companies.

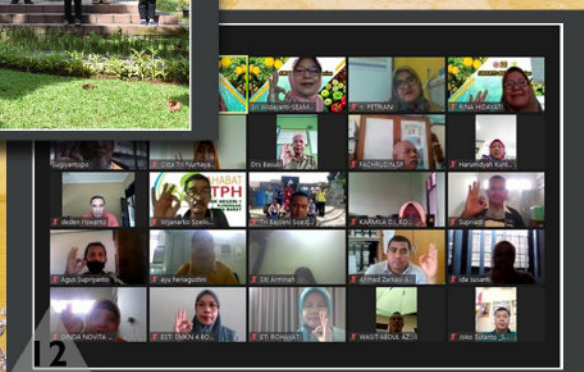
Through an online talk series activity, the Centre was also pleased to share how Cajuput Trees are utilized in Post-Mining Land Reclamation.

There are more interesting news and information in this issue. We share only to our Valued Readers.

Stay healthy, stay safe, stay happy!

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BIOTROP Shares Geospatial Knowledge to SMARTS-BE Program Participants

SEAMEO BIOTROP conducted an online training on Geodatabase Management of Monitoring and Diagnostic Application System for Plant Pests and Diseases on 10-13 August 2020. This activity was intended to improve the skills and knowledge of teachers participating in the SMARTS-BE program, in managing spatial and non-spatial data for the purposes of monitoring, reporting and diagnosing plant pests and diseases, as well as optimizing the use of systems that have been developed by the Center. A total of 48 teachers from various vocational schools participating in BIOTROP's SMARTS-BE program joined this activity.

Dr Irdika Mansur, BIOTROP Director, in his opening remarks, said that the SMARTS-BE program is an effort to intensify the use of agricultural land, so that spatial and non-spatial based data and information related to land and plants need to be monitored and processed into useful information. This is aimed at optimizing production while still applying the principles of sustainable agriculture.

"BIOTROP has developed a geolocation-based monitoring and diagnosis system for plant pests and diseases. The application was developed using an Android-based smartphone platform and a web-GIS dashboard to facilitate monitoring and reporting on the implementation of SMARTS-BE activities in each program

participating school," said Dr Irdika. In line with the dynamic principles of information and feedback conveyed by teachers, partners in charge and implementers in each school, he continued, a diagnostic system was developed as a follow-up to reporting and monitoring of geolocation-based plants. This system can assist implementers in taking care and handling plant pests and diseases, so that plants thrive and provide optimal production.

In this activity, the Centre presented its experts as the resource persons, namely Dr Supriyanto, Harry Imantho, MSc, Slamet Widodo Sugiarto, SSi, and Oxa Aspera Endiviana, ST. They delivered materials consisted of 1) Geospatial concepts and applications in agriculture; 2) Surveying, data acquisition and crop geotagging techniques; 3) Geodatabase making; 4) Spatial analysis for monitoring and identification of pests and plant diseases; 5) Standard Operating Procedures for implementing a geolocation-based plant diagnostic system; and 6) The use of a geolocation-based plant diagnostic system application. (zsp)



Mr Slamet Widodo Sugiarto, SSi demonstrates the use of drone for identifying the planting area



Participants and resource persons of the online training on Geodatabase Management of Monitoring and Diagnostic Application System for Plant Pests and Diseases

BIOTROP Holds In-House Workshop on Educational Video Production



Mr Defri Dahler, SE, MM explains the steps of making a clear and concise video script in video making

Due to pandemic of Covid-19, learning method has been transformed into online system. Educational Video is the most appropriate media as the online learning material. For year 2020, BIOTROP targeted to have at least one educational video. Since the Centre's main tasks are research, trainings and information dissemination, video production is a new tool for disseminating information. Video making can be made by professional Video Producers, however, during the process, the Centre's staffs need to join the video production and assist the video technical team.

On this occasion, the Centre in collaboration with a video producer held an in-house workshop on educational video production on 6-13 July 2020 to improve the skills of its 13 staff in preparing the scripts as well as video making techniques. The activity was conducted in classroom and practice sessions.



The shooting process of hydroponic video

In his opening remarks, Dr Irdika Mansur, BIOTROP Director, mentioned that besides being engaged in research activity, the Centre also focuses on capacity building of communities, including schools, through the implementation of various training courses. In this digital era, online training is among important tools to reach remote areas where individuals cannot join face-to-face training activities, especially during the Covid-19 pandemic. "One of the supporting facilities for online training is a video presentation, which provides both visual and audio aspects, thus, the presentation is more interesting and easier to understand. Through video, communities can learn many things from any places," said Dr Irdika. "This educational video production workshop will enhance the staff skills, so that later they can produce attractive educational videos containing our various knowledge and technologies. The videos will be distributed to targeted communities and schools."



The shooting process of Covid-19 pandemic video

The workshop featured Azwar Sutan Malaka, Pujiantoro and Mr Defri Dahler, SE, MM from the Center for Information and Communication Technology for Education/Pustekkom, the Ministry of Education and Culture of the Republic of Indonesia, to present topics on Media Content Outline - Material Description (GBIM-JM) and Script Making, Script Breakdown and Shooting Process, respectively. For the practice session, participants acted as production crews and produced hydroponics educational video with supervision from Moh. Khamim (Director), Januar Aprianto (Cameraman), Subandi (Voice Over Audio) and Pujiantoro (Editing) who are also from Pustekkom. (zsp, sis, rf)

Two BIOTROP's Scientists Receive Research Grants from Kemenristek/BRIN, LPDP and YKAN

Dr Erina Sulistiani, the Centre's Scientist and Head of Tissue Culture Laboratory, received a research grant from the Indonesian Ministry of Research and Technology (Kemenristek)/National Research and Innovation Agency (BRIN) and Indonesia Endowment Fund for Education (LPDP) for her research titled 'Application of Biotechnology for Provision of Cottonii Seaweed Superior Seedlings', with the aim to increase the capacity for supplying seaweed superior seedlings through tissue culture techniques. The research is part of the National Research Priority Program in the Field of Maritime: Processing of Seafood Products, and is incorporated in a research consortium on 'Native Strain of Indonesian Micro and Macro Algae (MALSAI)' coordinated by Dr Awalina from Indonesian Institute of Sciences (LIPI). Research activity will last for 3 years until 2022.

Dr Erina Sulistiani is wellknown for her research in tissue culture, especially in seaweed tissue culture. She has published two books on tissue culture technique, i.e., *Kultur Jaringan Rumput Laut (Kappaphycus alverizii)* [Tissue Culture Technique for Propagating Cottonii Seaweed] and *Produksi Bibit Tanaman dengan Menggunakan Teknik Kultur Jaringan* [Propagating Plant Seedlings using Tissue Culture Technique].



Another Scientist who has also the Research Department Manager of the Centre, Dr Aslan, also received a research grant from Yayasan Konservasi Alam Nusantara (YKAN) which is a local affiliate of The Nature Conservancy, for his two research titled 'Bioprospectation Mapping of East Kalimantan Mangrove and Its Endophytes for Anticancer and Antibiotics Candidates' for May-October 2020 term and 'Landscape Hydrological Study of Ciliwung, Citarum and Cisadane Watersheds' for August-December 2020 term. The first research is intended to explore mangroves biodiversity richness in East Kalimantan by discovering sustainable use of endophyte microbes derived from specific mangrove genus as material for bioproduction of anticancer and antibiotics candidates, and by mapping the spatial distribution of different genera and associations of mangroves at consistent pixel scale. Meanwhile, the second one is conducted to create a management plan at the landscape level of Ciliwung, Citarum and Cisadane Watersheds based on hydrological management for the recovery and protection of the area. (zsp/sis)



The 1st 2020 BIOTROP's Quarterly Public Seminar: the Use of 2 Satellite Imagery Methods for Peatland Mapping and Analysis

BIOTROP presented Dr Aslan, the Centre's Research Manager, in its 1st 2020 online Quarterly Public Seminar, held on 29 June 2020, to talk about his team's research study in 2019 on the urgency of peatland mapping and analysis studies in Indonesia using active and passive satellite imagery method in supporting low carbon development. A total of 96 participants from various Indonesian research and education institutions as well as private companies and non-government organizations joined this online activity.

At this seminar, Dr Aslan said that forest protection and peatland restoration are among five main policies of the Indonesian Government pertaining to low carbon development planning (PPRK), because the amount of carbon stored in the soil of peatland ecosystems is estimated to be 10 times greater than that stored above the soil surface. The carbon stored in the peatlands must be kept relatively stable and not be emitted into the atmosphere to prevent global warming.

He continued, based on the 2015 National Determined Contribution (NDC) document, written in the Paris Agreement, the Government of Indonesia has set a target of reducing Greenhouse Gas (GHG) emissions, which is 29% unconditionally (on its own) and 41% conditionally (with adequate international support) in 2030.

To support this policy, Dr Aslan and his team carried out research activities to ensure the availability of accurate basic information related to the latest map of peatland distribution in Indonesia as a basis for national low carbon policy making. He utilized remote sensing technology from active and passive satellite imagery method, including geostatistical modeling, and used input of more than 20 thousand validated peatland field observations from various sources. Through the MaxEnt geostatistical modeling approach, four scenarios of peatland distribution throughout Indonesia were produced.

Dr Aslan explained that mapping using active and passive satellite imagery method has three advantages. Firstly, it produces a map of peatland distribution that can combine the advantages possessed by active and passive satellite images. Indonesia as a tropical country is strongly influenced by cloud cover which greatly affects the accuracy of mapping peatland distribution in Indonesia. In this context, the use of active satellite imagery method, which is based on radar waves, is a solution for peatland mapping activities in the tropics that are often disrupted by cloud cover because radar sensors have the ability to penetrate clouds.

Secondly, the map of peatland distribution produced has a more detailed scale, which is 1:100,000 (much better in terms of accuracy) compared to the 1:250,000 reference map issued by the Centre for Agricultural Land Resources (BBSLDP) of the Indonesian Ministry of Agriculture. As an illustration, based on data released by BBSLDP (2011), no peatland cover was found in Sulawesi Island, but the results of this study showed the opposite. The existence of peatland in Sulawesi Island has been verified from field observation data (ground truth), active and passive satellite data monitoring, as well as from media news about peatland fires in Southeast Sulawesi Province in 2019.

Thirdly, the map of peatland distribution is generated using a systematic and efficient approach because it is derived from geostatistics modeling of Big Data Analysis and compilation of active and passive satellite data using Google Earth Engine technology. On the other hand, the map of peatland distribution issued by BBSLDP (2011) was produced using the peatland distribution boundary mapping method which might be biased because it uses a visual interpretation mapping technique having limitations and requires expertise and highly experienced operators to recognize the characteristics of the satellite image hue and peat soil covered by vegetation in the field.

From the results of this study, Dr Aslan said that the latest spatial data and information on peatlands in Indonesia on a scale of 1:100,000 is available in the form of geodatabases and printed maps. In addition, a web-based interactive map (GIS web) of peatlands in Indonesia can be accessed in <https://gambut.netlify.com/>. The method used in this study can also be applied by other parties with minimum supervision and unbiased results. Nevertheless, he said, the map of peatland distribution resulting from this study was still a probable presence of peatlands because it was produced based on a geostatistical modeling approach. Therefore, it is necessary to carry out a further thorough and systematic field validation and verification of the results.

Dr Aslan is a professional researcher and philanthropist with a strong background in spatial planning, remote sensing, geographic information systems (GIS) and natural resource management. He earned a PhD degree in Environmental Science from Indiana University, USA, in 2017 and an MS degree in Civil and Environmental Engineering from University of Missouri, USA, in 2009.

Dr Aslan is involved in various research, training and consultancy activities, with more than 16 years of experience in the fields of biodiversity, conservation, management of aquatic ecosystems, community development and socio-humanitarian issues. (zsp)



Dr Aslan delivers his explanation on the Use of 2 Satellite Imagery Methods for Peatland Mapping and Analysis

BIOTROP Formulates the Concept of Agro-Eco-Edu Tourism Program



Participants of FGD on Development and Management of Agro-Eco-Edu Tourism Program in a Participatory and Comprehensive Manner



Mr Atep Budiman, MM the Head of Bogor City Tourism Office shares his experiences in managing tourism in Bogor City



Mr Hikmat Eka Karyadi, MM the Manager of Agro-tourism at PT Perkebunan Nusantara VIII explains the strategic plans in developing the business side of Agro-Eco-Edu Tourism



Dr Awang Maharijaya, the Head of Center for Tropical Horticulture Studies, shares his expert opinions in developing Agro-Eco-Edu Tourism

BIOTROP performed a Workshop and Focused Group Discussion on Development and Management of Agro-Eco-Edu Tourism Program in a Participatory and Comprehensive Manner on 25-27 August 2020, attended by 24 staff engaged in the Centre's regular visitor program. This activity was intended to formulate and compile the concept of Agro-Eco-Edu Tourism in BIOTROP to initiate management plans of Agro-Eco-Edu Tourism objects and development permits; to identify tourism objects and current conditions; and to collect information and input from stakeholders for the document preparation of BIOTROP Agro-Eco-Edu Tourism program development plan.

Agro-Eco-Edu Tourism is a combination of tourism that utilizes landscapes (ecoparks) and technology tourism (edutourism) based on agriculture (agro-tourism) as attractions and tourist destinations for visitors. This program aims to foster harmonious relations between humans and their environment through the utilization of natural potential for tourism purposes, by taking into account aspects of natural and environmental preservation, socio-economic conditions, culture and visitor desires; to increase scientific activities and scientific development; and to increase BIOTROP's visibility as a center for tropical biological technology and innovation.

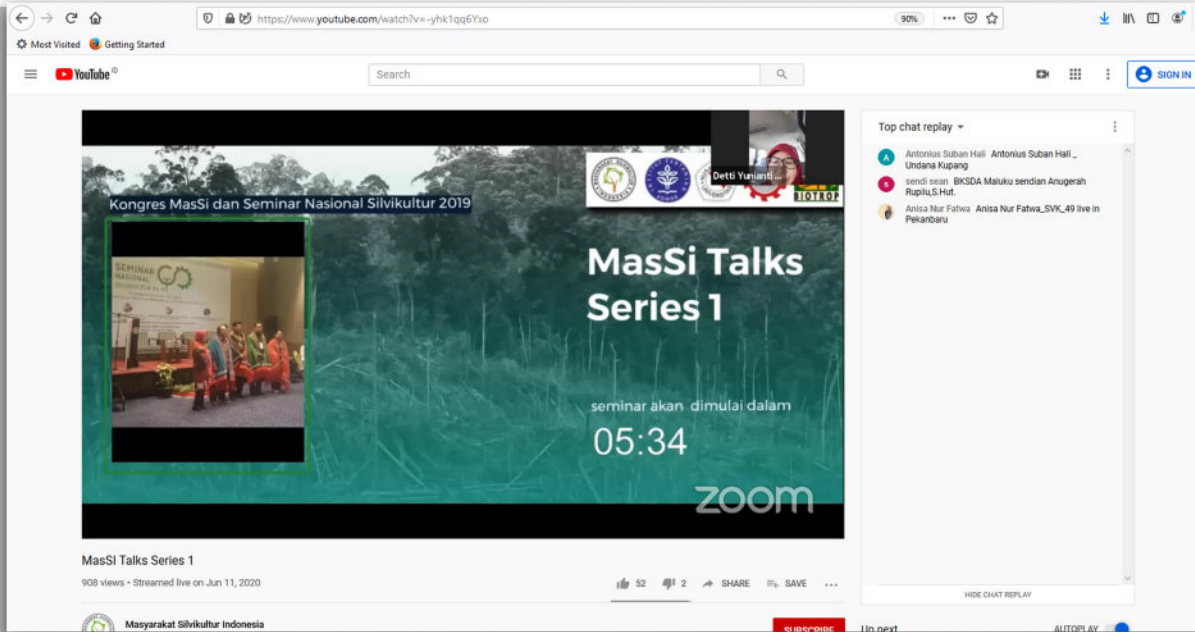
"BIOTROP has been developed as a community learning park since 2016. As part of the learning park, the Agro-Eco-Edu Tourism program will bring more benefits to the community," said Dr Irdika Mansur, BIOTROP Director, in his opening remarks. "The development of this program is also supported by the strategic

location of the Center, which is close to shopping centers, modern and exclusive housings, animal tourism spots and Bogor culinary spots."

He added that the Centre has various fields of science and technology that are useful to society, such as hydroponics, aquaponics, aquaculture, tissue culture, nurseries, mushroom cultivation, natural products, composting and entomology. The Centre will develop existing facilities and infrastructure so that they can be enjoyed and become a source of inspiration for the scientific community and the general public in relation with the utilization of tropical biology resources.

This activity featured Hikmat Eka Karyadi, MM, Manager of Agro-tourism at PT Perkebunan Nusantara VIII; Atep Budiman, MM, Head of the Bogor City Tourism Office; and Dr Awang Maharijaya, Head of Center for Tropical Horticulture Studies, Institut Pertanian Bogor (IPB), as the resource persons. They delivered presentation on Sharing Experiences in Building an Agro Tourism, Management and Licensing of Tourist Attractions in Bogor City, and Tajur Fruit Orchard, respectively. The Centre also invited Dr Ricky Avenzora, Associate Professor on Ecotourism Planning at the Department of Forest Conservation & Ecotourism, Institut Pertanian Bogor (IPB), to present Agro-Eco-Edu Tourism Development and Business Strategic Plans, and to act as a facilitator during the focus group discussion on Orientation Mapping and Stakeholder Reference, and Compilation of Development and Business Strategic Plan Documents. The expected output of this workshop and focus group discussion is a concept note of the Agro-Eco-Edu Tourism program. (zsp)

BIOTROP Director Talks Over the Potential of Cajuput Trees in Post-Mining Land Reclamation



Dr Irdika Mansur, the Centre's Director, was invited by the Indonesian Silvicultural Society (*Masyarakat Silvikultur Indonesia/ MASSI*) to be a resource person for the MasSi Talks Series I 'Increasing Productivity of Forests and Degraded Land in Indonesia' which was held on 12 June 2020. Dr Irdika delivered his presentation on 'the Establishment of Cajuput trees (*Melaleuca leucadendron*) in Post-Mining Land'.

In his talk, Dr Irdika mentioned that mining activities in production-forest area should not be only for ecological restoration, but it should also consider restoring the socio-economic aspect of the reclaim area. Within the past 25 years, technology of for post mining reclamation in Indonesia has improved significantly, including replanting of superior indigenous tree species in accordance with the decree of the Minister of Forestry of Indonesia No. 60 2009 for conservation purposes. To bring back economic value of the ex-mining land, planting of fast-growing non-timber producing tree species, such as Cajuput tree is needed.

"Cajuput tree is an adaptive species suitable for ex-mining land, since it is able to survive in marginal land with soil of very low pH, fertility, heavy soil, and temporary waterlogged. The plant can regrow if damaged by livestock and fire disturbance. It is also not palatable for livestock," said Dr Irdika

Seedlings, he continued, can be obtained through seeds germination or shoot cutting technique. One kilogram of seeds contains more than one million seeds. The seed germination process is easy to do and the seedlings are ready for planting within 3-4 months after germination. Meanwhile, propagation through shoot cuttings does not require hormonal treatments.

Before planting, the soil has to be initially treated because ex-mining land is infertile and compact (heavy soils) and has a low pH and low porosity. To solve this matter, Dr Irdika said that the addition of organic materials is the key. The organic materials act

as pH buffer, nutrient provider and moisture regulator of soil to improve soil structure and promote micro and macro fauna and microorganisms. Organic materials can be applied to all areas or only at the planting holes (for cajuput tree, 1-2 kg of organic materials per hole is sufficient).

"Seedlings are then planted at a planting space of 4 x 4 meters in accordance with planting regulations on ex-mining land. However, if the aim is also for production, then the planting space should be denser, 2 x 2 meter or 3 x 1 meter," said Dr Irdika.

Cajuput leaves are harvested 4 years after planting, afterwards leaves can be harvested every 9 months. He mentioned that harvesting the leaves and branches does not kill the trees, so that land stability can be maintained. Harvesting the leaves would keep the tree short, so that light could reach the ground. Hence, planting of the cajuput tree could be combined with other crops as in agroforestry or grasses for silvopasture system. The leaves are distilled to produce cajuput oil, and the solid waste can be used as boiler fuel. The waste could also be used for mulches and compost to be applied on the ex-mining land or to treat.

In his presentation, Dr Irdika also emphasized that cajuput trees provide quick economic and social advantages. Cajuput oil demand per year is currently estimated at 4,000 tons, but current production has only reached 500 tons; and not many people or private sectors are working on it. Thus, this can also be a promising market opportunity.

The webinar which was moderated by the Secretary-General of MASSI, Dr Ir Luluk Setyaningsih, MSi, also presented Prof Dr Ir Nurheni Wijayanto, MS, from the Department of Silviculture, Faculty of Forestry, Institut Pertanian Bogor (IPB) and Marinus Kristiadi Harun, MSi, from BP2PLHK Banjarbaru. They talked about 'Agroforestry – Managed Succession Process to Increase Productivity of Forests and Degraded Land'; and 'Techniques for Rehabilitation of Forests and Peatlands through Agroforestry System', respectively.

The full record of this webinar can be accessed at <https://www.youtube.com/watch?v=-yhk1qq6Yxo>. (zsp)

20 Proponents Present Research Progress Reports funded by BIOTROP



Dr Aslan presents research progress reports

SEAMEO BIOTROP held an online presentation of research progress reports on 30 June 2020 for research activities that were awarded BIOTROP's Research Grant this year.

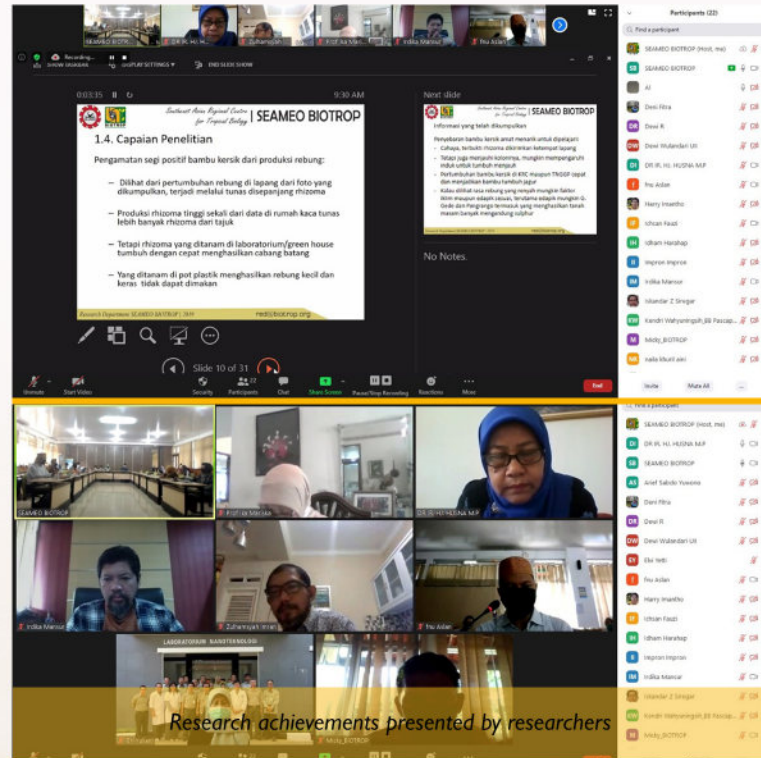
Dr Irdika Mansur, the Centre's Director, in his opening remarks, mentioned the importance of consistently conduct efforts to implement research to communities, especially in research related to food security and food sovereignty.

Dr Zulhamsyah Imran, the Centre's Deputy Director for Program, in his remarks, mentioned that the research activity should not be research only, but should be more applicable to the community. He also hoped that research activities supported by BIOTROP will produce good results and be published in both national and international levels; so that the results will reach the community.

In starting the presentation, Dr Aslan, the Centre's Research Manager, conveyed a good news that two research from BIOTROP under supervision of Dr Soekisman Tjitrosemito and Dr Ulfah J. Siregar, both are the Centre's Scientists, will be funded by MEXT next year.

There were twenty research activities presented with various topics related to the Centre's Program Thrusts, consisted of eleven titles from the Centre's scientists and nine titles from scientists of other institutions. Each report was delivered in 10 minutes, continued with brief discussion. The titles are:

1. Biological Study of *Chimonobambusa quadrangularis* and Potential of Young Bamboo Shoots for Consumption; by Dr Sri Sudarmiyati Tjitrosoedirdjo from BIOTROP.
2. Yeast Flour Formulation for Controlling Ochratoxin A Producing Fungi in Arabica Coffee; by Prof Okky Setyawati Dharmaputra from BIOTROP.
3. Integration of Oil Palm Plants with Cows to Increase Farmer's Income through Utilization of Oil Palm Waste, Cow Dung, and Intercropping Plants; by Prof M. Winugroho from BIOTROP – Animal Husbandry Research and Development Center.
4. Pest Insect Infestation in Rice: Analysis of Product Loss and Development of Fumigation Protocol for Insect Management of *Cryptolestes* sp. that is Resistant to Phosphine in the Field; by Dr Idham Sakti Harahap from BIOTROP–Institut Pertanian Bogor (IPB).
5. Endophytic Bacteria Technology for Healthy Seed Production and Improvement of Pepper Plant Health; by Dr Abdul Munif from BIOTROP–Institut Pertanian Bogor (IPB).
6. Compilation of Ecosystem Health Indexes in Indonesia (3rd Year); by Prof Arief Sabdo Yuwono from BIOTROP–Institut Pertanian Bogor (IPB).



Research achievements presented by researchers

7. Evaluation of the Use of Watermelon Dregs as a Functional Feed Raw Material for Freshwater Lobster (*Cherax quadricarinatus*); by Dr Ichsan Achmad Fauzi from BIOTROP–Institut Pertanian Bogor (IPB).
8. Application of Selected Microbes and Modified Organic Enhancing Materials in Selected Plants for Restoration of Degraded Land in Karst, Yogyakarta; by Dr Dewi Wulandari from BIOTROP – Universitas Islam Indonesia Yogyakarta.
9. Development of Mint Oil-based Nano-encapsulation Fumigants for Warehouse Pest Insect *Tribolium castaneum* Control; by Dr Sri Yuliani from BIOTROP – Post Harvest Research and Development Center.
10. Development of Spatial Decision Support Systems for Village-Based National Rice Production (Phase I: Development of Baseline Models for Rice Spatial Dynamics); by Dr Impron from BIOTROP–Institut Pertanian Bogor (IPB).
11. Application of Dark Septate Endophytes (DSE) Fungi to Encourage Rice Production in Acidic Stress Conditions in Kalimantan Swamp Land; by Dr Surono from Indonesian Agency for Agricultural Research and Development.
12. Breeding of Eha (*Castanopsis buruana* Miq.) to Support the Development of Plantation Forest in Sulawesi; by Prof Husna from Universitas Halu Oleo.
13. Genetic Diversity and Structure Analysis of Sipuncula in the Banda Island; by Dr Majariana Krisanti from Institut Pertanian Bogor (IPB).
14. Genotyping of Sengon (*Falcataria moluccana*) Resistant to Baktora Pest (*Xystrocera festiva*) and Puru Rust Disease (*Uromycladium falcatarium*) using Genomic Data; by Dr Ulfah Juniarti Siregar from Institut Pertanian Bogor (IPB).
15. Increasing the Added Value of Kemenyan Essential Oils through Innovation in Health and Beauty Products; by Dr Aswandi from Aek Nauli Forestry and Environment Research and Development Center.
16. Acid Mine Water Management using Floating Gardens; by Armaiki Yusmur, MSi, from BIOTROP.
17. Collection of Ebony (*Diospyros celebica*) Reproductive Materials Based on Genetic Information; by Prof Iskandar Z. Siregar from Institut Pertanian Bogor (IPB).
18. Diversity of Haplotypes and Populations of the Mimi (*Tachypleus gigas*) Subdivision for Conservation Monitoring in Indonesia; by Naila Khuril Aini, MSi, from Institut Pertanian Bogor (IPB).
19. Utilization of Local Marine Bacteria from the Indonesian Aquatic Environment for the Development of Textile Industry Dyes (Indigo); by Elvi Yetti, MSc, from Institut Pertanian Bogor (IPB).
20. Study on the Development of Kampung Chicken (*Gallus gallus domesticus*) with the Free Range System on Peatlands in Riau Province; by Deni Fitra, MP, from Institut Pertanian Bogor (IPB). (zsp)

BIOTROP Conducts Internal Surveillance on ISO 9001:2015 for 2020

BIOTROP's Quality Management System has been certified by ISO 9001 since 2000. Up to present, the Centre's QMS is certified by ISO 9001:2015. As one of ISO requirements, the organization shall conduct its Internal surveillance of the QMS to continue its ISO certification. Accordingly, the Centre held its internal surveillance on ISO 9001:2015 on 18-19 and 24 August 2020. This activity was aimed to ensure that the quality management system (QMS) on the scope of Scientific Research, Product Development Laboratory, Training Administration, knowledge Management, Research Support Activities Management, and Dormitory and Facilities, are carried out consistently in accordance with ISO 9001:2015 standard.

In his opening remarks, Dr Zulhamsyah Imran, Deputy Director for Administration and currently the Management Representative for SEAMEO BIOTROP, emphasized that the internal surveillance activity was essential to maintain as well as assure the continuous improvement of the quality management system that is already implemented by BIOTROP.

Santi Ambarwati, MSi, the Lead auditor, explained that the surveillance process included checking of the applied Standard Operating Procedures (SOP) conformity with the implementation, the completeness of documents, data records and results of customer satisfaction analysis. (zsp, sis, rf)



Dr Zulhamsyah Imran delivers his opening remarks during the opening ceremony of BIOTROP internal surveillance on ISO 9001:2015

No	Findings	Standards	Severity	Priority	Responsible Person	Corrective Action
1	Ketidakeesuaian yang terjadi di FAD umumnya disebabkan oleh kurangnya pengetahuan pelanggan terhadap prosedur dan aturan keuangan yang ada dan yang temutakhirkan. Dalam masa pandemi COVID-19, permintaan uang muka perjalanan dinas seringkali terjadi di hari libur kerja, dan PUM dan PJUM yang tidak sesuai.	6.1.2 7.4 Komunikasi 8.2.1 Komunikasi pelanggan	Minor	Tinggi	Rima Febrina	FAD perlu sosialisasi bertatap kepada pelanggan mengenai penggunaan bersumber maupun n
2	Perlu dilakukan revisi atas Sasaran Mutu FAD tahun 2020 dengan mempertimbangkan kondisi saat ini, ketersediaan SDM, dan hambatan pihak eksternal FAD. Antara lain revisi indikator balas waktu pelayanan PUM, sari paling cepat 5 hari terlayani menjadi paling lambat diproses dalam 1	6.1.1 6.1.2 6.3 Perencanaan perubahan 8.5.6	Oi	Tinggi	Rima Febrina	FAD melas FAD tahun mengperbaiki internal di target was SDM dan percapaian

Results of BIOTROP internal surveillance on ISO 9001:2015



Mr Zulkarnaen Noor Syarif, SKom requests information from Dr Erina Sulistiani during internal surveillance in the Tissue Culture Laboratory

List of Online Webinar and Training Courses

SMARTS-BE Talks Series

BIOTROP organized 17 SMARTS-BE Talks Series for teachers and educational staff of Vocational Schools participating in the SMARTS-BE program starting from 21 July 2020 until 24 November 2020 with schedules as follows:

Series	Date	Topic	Resource Person
Past			
1	21 July 2020	Development of STEM for SMARTS-BE	Dr Supriyanto (SMARTS-BE Coordinator)
		Education based cultivation of Californian lemon plants	Drs Juanda, MSi (SMKN 1 Cibadak)
		Cultivation of cherry tomatoes with a hydroponic system	Muhammad Nuh, MSi (SMKN 2 Banyuasin III)
2	28 July 2020	Potted plant technique as a supply of fresh fruit during pandemic	Surapati, SP (Regional Coordinator)
		That sweet one is called soft candy	Eti Suyanti, MPd (SMKN 57 Jakarta)
		Fruit multiplication technique	Bambang Wicahyono, MMA (SMKN 1 Tapin Selatan)
3	4 August 2020	Potential of food plants in forest areas	Dr Omo Rusdiana (Regional Coordinator)
		Potted orange plants	Eti Rohayati, SP (SMKN 2 Subang)
4	25 August 2020	Rural economic development	Handian Purwawangsa, MSi (Directorate of Student Affairs and Career Development, Institut Pertanian Bogor-IPB)
		Cultivation of chokun oranges and crystal guava	Sri Esti Hariati, MMPd (SMKN 4 Kota Bogor)
		Building entrepreneurship spirit for the millennial generation of the SMARTS-BE program in the industrial era 4.0	Sugiarta, MPd, MSi (SMK-PPN Mataram)
5	1 September 2020	Digital marketing of agricultural products	Sutrisno, SKep, Ners, MAN (Universitas Aisyah Pringsewu)
		Utilization of citrus stands at SMK-PPN Saree	Muhammad Amin, MP (SMK-PPN Saree)
		Cultivation of potted orange plants and agricultural land at SMKN 1 Pacet	Dra Ida Yuniati Surtika, MM (SMKN 1 Pacet)
6	8 September 2020	Processing of purple sweet potato bakpia	Nur Aini, SP (SMKN 1 Nisam)
		Lemon cultivation	Ade Firdaus (SMKN 2 Padeglang)
7	15 September 2020	Synchronization of SMARTS-BE citrus plantation activities with the ATPH skills competency curriculum of SMKN 1 Salam	Bina Yunandari, SP (SMKN 1 Salam)
		Orange cultivation at SMKN 1 Gelumbang	Edi Armada (SMKN 1 Gelumbang)
8	22 September 2020	Processing of bilimbi into raisins (Kisluh Murah dan Maknyus)	Zaryati (SMKN 1 Kelapa)
		Orange cultivation technique	Antonius U.S. Kuala, SP (SMKN 1 Wibakul)
9	29 September 2020	Utilization of ripened bananas to be more productive and consumptive using the vacuum frying method	Nanik Winarsih, SPd (SMKN 1 Tulungagung)
		Making herbal chips and crackers as alternative foods to support healthy food patterns as superior products of SMK Negeri 1 Kalibagor, Banyumas, Central Java	Indriyani Rokhmaningsih, SP (SMKN 1 Kalibagor, Banyumas)

Upcoming			
10	6 October 2020	Cultivation of lime on fertisol soil at SMKN 1 Bawen	Bambang Supriyono (SMKN 1 Bawen)
		Cultivation of crystal guava in ex-swampy area	Sitti Dasrania, SP (SMKN 5 Kendari)
11	13 October 2020	Cultivation of mini jackfruit	Sugiyantopo (SMKN 2 Metro)
		SMARTS-BE program strengthens the branding of Indonesian Agricultural Vocational Schools	Abdul Muhid (SMKN 5 Jember)
12	20 October 2020	Fruit soft candy	Suhlih, STP (SMKN 1 Kemang Bogor)
		Control of fruit breaking in chokun oranges at SMKN 63 Jakarta	Valentina Purnama Dewi (SMKN 63 Jakarta)
13	27 October 2020	SMARTS-BE program fosters the creativity of innovative products of students of SMK-PPN 1 Tegalampel Bondowoso	Ambasiatus Sofi, SPd (SMK-PPN 1 Tegalampel Bondowoso)
		How to increase the production of Pontianak citrus fruits in Timika, Papua, at SMKN 2 Mimika	Yermias Domuhu, SP (SMKN 2 Mimika)
14	3 November 2020	Various processed fruits products	Tri Setya Budi, SPd (SMKN 1 Temanggung)
		Melon cultivation	F.X. Harimurti, SP (SMKN 2 Slawi)
15	10 November 2020	Utilization of cultivated dry land for fruit crops	Irman Hendrayani (SMKN 1 Bayan)
		Lemon cultivation	Ni Wayan Putri Setyawathi (SMKN 1 Petang)
16	17 November 2020	Cultivation of potted fruit plants at SMKN 3 Pandeglang	Irmansyah, SHut (SMKN 3 Pandeglang)
		Development of dragon fruit cultivation at SMKN 6 Masni Manokwari	Recky A.D. Risamasu (SMKN 6 Masni Manokwari)
17	24 November 2020	Utilization of nutmeg wastes as a beverage product	Desy Natalia (SMKN 1 Gedongtataan)
		Development of dragon fruit cultivation at SMKN 6 Masni Manokwari	Recky A.D. Risamasu (SMKN 6 Masni Manokwari)

Webinar Series on the Potential of Agricultural Biotechnology in Realizing Food Security in Indonesia

This webinar series were performed by the Centre in collaboration with Indonesian Biotechnology Information Centre (IndoBIC), International Service for the Acquisition of Agri-biotech Applications (ISAAA) and Center for Conflict Resolution Studies of Institut Pertanian Bogor (IPB) (CARE). The activity was aimed to introduce the development and roles of agricultural biotechnology to help achieve food security in Indonesia. A total of 573 participants and 266 participants joined session 1 and session 2, respectively. The schedules were as follows:

Session	Date	Moderator	Topic	Resource Person
1	22 July 2020	Prof Dr Parulian Hutagaol (Institut Pertanian Bogor-IPB)	Status of biotech crops in the world and Indonesia	Prof Dr Muhammad Herman (Country Coordinator – Feed the Future Biotechnology Potato Project/FtFBPP)
			Regulation of biotech crops in Indonesia	Prof Dr Bambang Prasetya (Head of Commission on Biosafety of Genetically Engineered Products/ KKH-PRG)
2	24 July 2020	Prof Dr Bambang Purwantara (IndoBIC; Institut Pertanian Bogor-IPB)	Socio-economic studies of biotech corn	Dr Dahri Tanjung (Vocational School of Institut Pertanian Bogor-IPB; CARE of Institut Pertanian Bogor-IPB)
			Socio-economic studies of biotech potatoes	Prof Dr Parulian Hutagaol (Economic Science, Institut Pertanian Bogor-IPB)

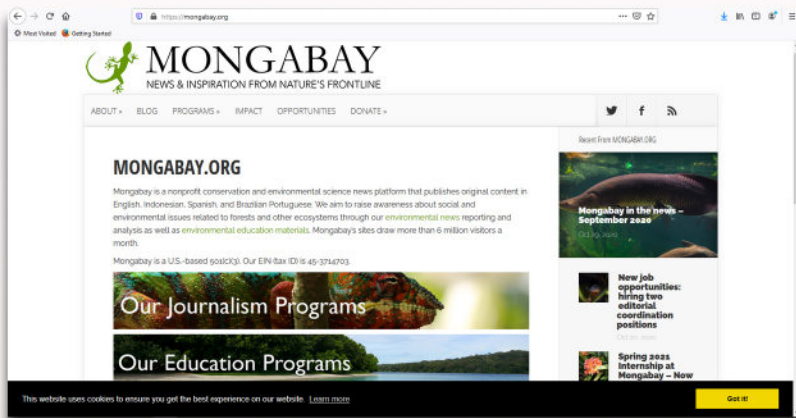
2nd Urban Agriculture Training Courses

The Second Online Urban Agriculture Training Courses was held by the Centre on 12-25 August 2020 for 200 participants consisted of community, students, teachers and researchers with schedules as follows:

Date	Session	Topic	Resource Person
12 August 2020	3	Introduction to hydroponics	Riana Hartati, SSi (Research Assistant)
	4	Scopes of aquaculture	Shella Marlinda, MSi (Research Assistant)
13 August 2020	5	Hydroponic technique and growing media	Riana Hartati, SSi (Research Assistant)
	6	Aquaculture	Shella Marlinda, MSi (Research Assistant)
14 August 2020	7	How to get started with hydroponics	Riana Hartati, SSi (Research Assistant)
	8	Harvesting of aquaculture products	Shella Marlinda, MSi (Research Assistant)
18 August 2020	9	Maintenance and harvesting	Riana Hartati, SSi (Research Assistant)
	10	Introduction to feed	Shella Marlinda, MSi (Research Assistant)
19 August 2020	11	Tissue culture techniques for plant seedling production	Dr Erina Sulistiani (Head of Biotechnology Laboratory)
	12	Introduction of edible mushroom cultivation	Samsul A. Yani, SSi (Advisor for Product Development Unit)
21 August 2020	13	Stages of micropropagation of plant seedlings	Dr Erina Sulistiani (Head of Biotechnology Laboratory)
	14	Making F0 and F1 mushroom starter	Samsul A. Yani, SSi (Advisor for Product Development Unit)
24 August 2020	15	Facilities for plant tissue culture and aseptic techniques	Dr Erina Sulistiani (Head of Biotechnology Laboratory)
	16	Making F2 and F3 mushroom starter	Samsul A. Yani, SSi (Advisor for Product Development Unit)
25 August 2020	17	Plant tissue culture media	Dr Erina Sulistiani (Head of Biotechnology Laboratory)
	18	Mushroom baglog maintenance	Samsul A. Yani, SSi (Advisor for Product Development Unit)



Check this out! 5 Useful Websites on Tropical Biology



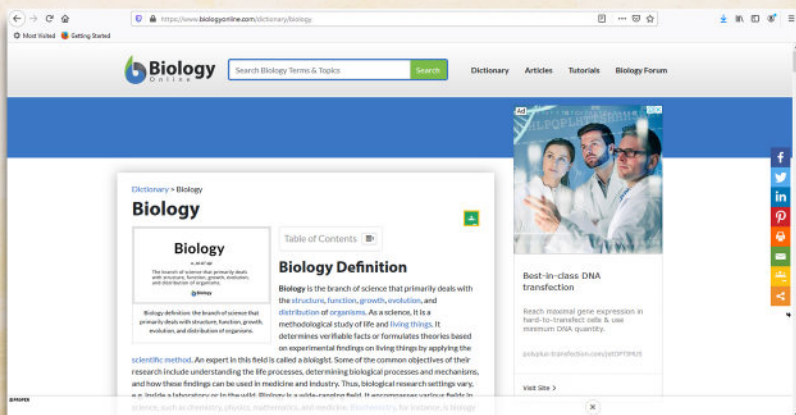
<https://mongabay.org/> and <https://www.mongabay.com/>

Mongabay is a nonprofit environmental science and conservation news platform that produces original reporting in English, Indonesian, Spanish and Brazilian Portuguese by leveraging over 500 correspondents in some 70 countries. It aims to raise awareness about social and environmental issues related to forests and other ecosystems through environmental news reporting and analysis as well as environmental education materials. Its main beats are forests, wildlife, oceans and the conservation sector. It also undertakes special reporting projects, which are deep dives on specific topics and geographies.



<https://basicbiology.net/>

Basic Biology is a media company that teaches the world about the fascinating world of biology. The company was founded by Adam Purcell, an ecologist and all-around nature enthusiast from New Zealand. Its mission is to create an interesting and educational website that can help people learn the basics of biology; and to increase people's appreciation of the natural world. The website contains much information on basic biological knowledge.



<https://www.biologyonline.com/>

Biology Online is the home for everyone who is interested in studying and becoming more familiar with Biology. Created in 2001, the site is the world's most comprehensive database of Biology terms, tutorials and articles with over 33 million visitors using the site on an annual basis. The site aims to educate and promote awareness of all things regarding Biology, offering free and easy access to foundational information in the Biological Sciences.



<http://www.cellbiol.com/>

'The Bio-Web: Resources for Molecular and Cell Biologists' is a non-commercial, educational site with the only purpose of facilitating access to molecular and cell biology-related information over the internet.

BIOTROPIA, The Southeast Asian Journal of Tropical Biology, is a scientific publication of the Southeast Asian Ministers of Education Organization (SEAMEO) – Southeast Asian Regional Center for Tropical Biology (BIOTROP). It publishes articles in the broad areas of tropical ecosystems and environmental impacts, biodiversity conservation and sustainable development and biotechnology.

BIOTROPIA has been indexed by SciVerse SCOPUS (Elsevier), CrossRef, DOAJ, Sinta, Google Scholar.

BIOTROPIA Vol.27 No.2 (2020) August issue is now available, containing ten research papers titled:

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by Narinthorn Jumwong, Chongrak Wachrinrat, Sarawood Sungkaew, Atchara Teerawatananon
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by Kobsak Wanthongchai, Voradet Tarusadamrongdet
- LIMITED SEED DISPERSAL MAY SHAPE GENETIC STRUCTURE OF *Hydnophytum formicarum* JACK. POPULATIONS IN MANGROVE ECOSYSTEM
by Abdul Shukor Yusoff, Wan Bayani Wan Omar, Shahrudin Rohani
- SITE INDEX OF SIAMESE ROSEWOOD (*Dalbergia cochinchinensis* Pierre) IN PLANTATIONS OF THAILAND
by Taengmoo Phunchaisri, Chongrak Wachrinrat, Ponthep Meunpong, Suwan Tangmitcharoen, Nawaphong Kuasakun
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The photo was taken by Kobsak Wanthongchai.

