

To whom it may concern,

## Certificate of Abstract Acceptance & Fee Invoice The International Conference of Biomass and Bioenergy 2020

This is to certify that the author(s) of this certificate, submitted an abstract of a full paper for the International Conference of Biomass and Bioenergy 2020, and the Paper Committee of the conference has accepted the abstract as a relevant one to the theme and fields of the conference. The recipient is entitled to deliver a presentation and could submit a full paper to the conference.

This is a reminder that the full paper acceptance is subjected to a peer reviewing result, which will be undertaken after the full paper submission that is due on 25 July 2020.

An online conference hosted in Bogor, Indonesia, will be conducted on 10 and 11 August 2020.

If a full paper is accepted, a review and publication fee of IDR 2,250,000 will be due for reviewing, minor corrections and IOP's Conference Series publication costs.

A paper must be presented by one of the authors and a participation fee of IDR 500,000 is due on 19 July 2020. Presenters with or without full papers (fee applied per number of oral presentations delivered, an oral presenter owes the fee, the e-certificate included for the presenter).

Free participations: all co-authors (non-oral presenter only) and non-author participants who are registered for the attendance and optional fee of IDR 200,000 is due for the e-certificate.

Author(s) full name(s): Melya Riniarti, Wahyu Hidayat, Hendra Prasetya, Ainin Niswati, Udin Hasanudin, Jiho Yoo, Sangdo Kim and Sihyun Lee

Submission number: 81

Title of paper: Using two dosages of biochar from shorea to improve the growth of *Paraserianthes falcataria* seedlings

Yours sincerely

Date: June, 30<sup>th</sup> 2020



Professor, Dr. Haruhiro Fujita  
The Secretary  
The International Conference of Biomass and Bioenergy 2020

## The International Conference of Biomass and Bioenergy 2020

### PAYMENT INVOICE No.76/REG/ICBB2020

To : The Secretariat of ICBB 2020, SBRC-IPB University,  
IPB Baranangsiang Campus, Bogor, Indonesia

Amount Due : # IDR 500,000 #

In Payment of : Participation Fee of the International Conference of Biomass and Bioenergy  
2020 Paper No.81 Melya Riniarti

---

---

**IDR 500,000**

---

Bogor, June 30<sup>th</sup> 2020



Prof. Dr. Haruhiro Fujita  
ICBB 2020 Secretary

Payment method: Bank Transfer or cash  
Account holder: Haruhiro Fujita (Secretary of International Conference of Biomass & Bioenergy 2020)  
Account number: 0550960213  
Branch name: Bogor, Indonesia  
Bank name: Bank Negara Indonesia (BNI)  
SWIFT code: BNINIDJA  
Address: BNI 46 Bogor Branch, Jl. Ir. H. Juanda No.52, Bogor, Indonesia

Please send the payment transfer receipt to [icbb.secretariat@gmail.com](mailto:icbb.secretariat@gmail.com) with the name and submission no. for our reference.

2020



# E-PROGRAM BOOK INTERNATIONAL CONFERENCE OF BIOMASS AND BIOENERGY 2020

“Advanced Technology and Digital Innovations  
in Biomass, Bioenergy and Agriculture”  
10-11 Augustus 2020

Host :



Co-Host :



Sponsored by :



Supported by :



<b>[1D-2.44] Sustainability of Biodiesel B30, B40 and B50 in Indonesia.....</b>	<b>53</b>
<b>[1D-3.45] Clustering Analysis for Production System Design of Emulsifier for Biodiesel B30 based on Digital Business Ecosystem.....</b>	<b>54</b>
<b>[1D-3.60] Value Added Products from Urban Organic Wastes: A Whole Systems Perspective.....</b>	<b>55</b>
<b>[2A-1.37] Effect of indigenous cellulolytic fungi enhancement on organic carbon and soybean production on peat soil.....</b>	<b>57</b>
<b>[2A-1.40] Utilization of Plant Waste as Botanical Pesticide for Citrus Pest Control.....</b>	<b>58</b>
<b>[2A-1.54] Natural dyes extracted from longan and inthanin bok leaves as light-harvesting units for dye-sensitized solar cells.....</b>	<b>59</b>
<b>[2A-2.47] Utilization of Cellulose Nanocrystal (CNC) as a filler for chitosan based films for cayenne pepper packaging.....</b>	<b>60</b>
<b>[2A-2.48] Biorefinery Of Genetically Modified Soybean as Biodiesel With Sustainable Production System in Indonesia : A Review.....</b>	<b>61</b>
<b>[2A-3.59] Oil Palm Empty Fruit Bunch Ash as a Potassium Source in the Synthesis of NPK Fertilizer.....</b>	<b>62</b>
<b>[2A-3.81] Using two dosages of biochar from shorea to improve the growth of Paraserianthes falcataria seedlings.....</b>	<b>63</b>
<b>[2A-3.82] Investigation of Rotary Dryer Performance Fueled by Wood Pellets for Biomass Processing.....</b>	<b>64</b>
<b>[2A-3.58] Solid Alcohol Formulation as a Lighters in Bio-Briquettes of Agricultural Biomass.....</b>	<b>65</b>
<b>[2A-4.100] Characterization of physiological properties of bacteria isolates TM4 and BNT8 in biopesticide formulas.....</b>	<b>66</b>
<b>[2A-4.106] Washing Metals in Rice Straw to Improve Combustion Properties.....</b>	<b>67</b>
<b>[2A-4.99] Biodegradable foams based on extracted fractions from sorghum by-products.....</b>	<b>68</b>
<b>[2A-5.110] Application of MAG (monoacyl glycerol) as emulsifier with red palm oil in body cream product.....</b>	<b>69</b>
<b>[2A-5.111] Evaluation of M-DAG purification process in increasing m-dag yield value.....</b>	<b>70</b>
<b>[2A-5.114] Formulation of mono-diacylglycerol from palm fatty acid distillate and glycerol as antistatic agents on plastics.....</b>	<b>71</b>
<b>[2B-1.38] A system analysis of the biomass integrated gasification solid oxide fuel cell.....</b>	<b>72</b>
<b>[2B-1.41] Green Prosperity: A Natural-based Solution for Rural Electrification in Indonesia.....</b>	<b>73</b>



	Cellulose Nanocrystal (CNC) as a filler for chitosan based films for cayenne pepper packaging	graphene-like materials derived from biomass wastes and its electrical conductivity	(SnCl <sub>2</sub> ) and Stannous Sulfate (SnSO <sub>4</sub> ) Synthesis from Tin Powderization Waste	of bioenergy plantation in Bukit Soeharto Research Forests, East Kalimantan
	2A-2.48. Biorefinery of Genetically Modified Soybean as Biodiesel with Sustainable Production System in Indonesia: A Review	2B-2.49. Fuel Properties of Two Types High Speed Diesel Blending with Palm Oil Biodiesel in Indonesia	2C-2.51. The parameters study in essential oil extraction from black pepper seeds using microwave hydrodistillation by modeling	2D-2.103. Potency and prospect of various raw materials for bioethanol production in Indonesia: A review
	2A-2.55. Comparison of Pyrogallol Derivative Performance using Methyl Linoleate from Sunflower Oil and Corn Oil as Biodiesel Antioxidant Additives	2B-2.88. Performance Analysis of Microalgae Cultivation in Photobioreactors with IOTs (Internet of Things)	2C-2.52. RNA-seq derived identification of coronatine-regulated genes putatively involved in terpenoid biosynthetic pathway in the rubber tree <i>Hevea brasiliensis</i>	2D-2.104. Study on Environmental Impact of Electricity Production from Biomass Power Plant System Through Life Cycle Assessment (LCA) Method in Aceh Province Indonesia
10.15 - 10.30				
	<b>Chair: Haznan Abimanyu</b>	<b>Chair: Endang Warsiki</b>	<b>Chair: Kiyoshi Dowaki</b>	<b>Chair: Oki Muraza</b>
10.30 - 12.00	2A-3.59. Oil palm empty fruit bunch ash as a potassium source in the synthesis of npk fertilizer	2B-3.79. Synthesis of biodiesel from kesambi oil ( <i>Schleichera oleosa</i> L.) using carbon nanotube-supported zinc oxide heterogeneous catalyst	2C-3.64. Characterization of pyrolysis products derived from palm oil empty fruit bunches	2D-3.80. Impact Of B30, B40 And B50 Policies On The Economy Of Indonesia
	2A-3.81. Using two dosages of biochar from shorea to improve the growth of <i>Paraserianthes falcataria</i> seedlings	2B-3.61. Characteristics of biochar produced from the harvesting wastes of meranti ( <i>Shorea</i> sp.) and oil palm ( <i>Elaeis guineensis</i> ) empty fruit bunches	2C-3.69. Potential of polypropylene Nanocomposite Reinforced with Cellulose Nanofiber from Oil Palm Empty Fruit Bunch as Sustainable Industrial Packaging: A Review	2D-3.93. Genetic Diversity Assessment of Indonesian Sorghum Germplasm Based on Agro-morphological Traits
	2A-3.82. Investigation of Rotary Dryer Performance Fueled by Wood Pellets for Biomass Processing	2B-3.66. Potential evaluation of anaerobic mono-digestion on dry water primrose for biogas production	2C-3.97. Performance evaluation of the levulinic acid production using calendula ( <i>Calendula Officinalis</i> ) as	2D-3.72. Economic Technology Analysis of Furfural Purification Process From Hydrothermal Hydraulic Products from Empty

### **[2A-3.81] Using two dosages of biochar from shorea to improve the growth of *Paraserianthes falcataria* seedlings**

Melya Riniarti<sup>1\*</sup>, Wahyu Hidayat<sup>1</sup>, Hendra Prasetya<sup>1</sup>, Ainin Niswati<sup>2</sup>, Udin Hasanudin<sup>3</sup>, Jiho Yoo<sup>4</sup>, Sangdo Kim<sup>4</sup>, Sihyun Lee<sup>4</sup>

1. Department of Forestry, Faculty of Agriculture, University of Lampung, Jl. Sumantri Brojonegoro 1, Bandar Lampung, 35145, Indonesia
2. Department of Agrotechnology, Faculty of Agriculture, University of Lampung, Jl. Sumantri Brojonegoro 1, Bandar Lampung, 35145, Indonesia
3. Department of Agroindustrial Technology, Faculty of Agriculture, University of Lampung, Jl. Sumantri Brojonegoro 1, Bandar Lampung, 35145, Indonesia
4. Climate Change Research Division, Korean Institute of Energy Research, Daejeon, 34129, Republic of Korea

E-mail: melya.riniarti@gmail.com

**Abstract.** The objective of the study was to examine the effect of biochar addition on the growth of sengon (*Paraserianthes falcataria*) seedlings. Biochar from shorea was produced using a traditional kiln at 400°C and 600°C. Scarification of sengon seeds were conducted using hot water with temperature at 80°C and then soaked for 24 hours. The seeds were then spreaded onto germination media and after germinated, seedlings were moved to polybags contain soil and biochar. Two dosages of biochar such as 25%, 50% were applied and compared with control. The research is arranged in a completely randomized design with 15 replicates. The examination of seedlings growth was conducted one week after transplanting, then subsequently monitored every 2 weeks. The results showed that the addition of biochar improved the survival rate of seedlings, height and diameter increments, dry weight and root nodules. The results showed a potential of using biochar to improve the growth of sengon seedlings in the nursery.

**Keywords:** Biochar, *Paraserianthes falcataria*, seedling growth