

4th International Conference on Smart and Innovative Agriculture (ICoSIA 2023)

BIO Web of Conferences Volume 80 (2023)

Yogyakarta, Indonesia
10-11 October 2023

Editors:

**M.Z. Abidin
R. Shamsudin
P. Tongdeenok**

**S.T. Sobue
A. Younf
A. Hoque**

ISBN: 978-1-7138-8653-2

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571

Some format issues inherent in the e-media version may also appear in this print version.

This work is licensed under a Creative Commons Attribution 4.0 International License. License details:
<http://creativecommons.org/licenses/by/4.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2024)

For additional information, please contact EDP Sciences – Web of Conferences
at the address below.

EDP Sciences – Web of Conferences
17, Avenue du Hoggar
Parc d'Activité de Courtabœuf
BP 112
F-91944 Les Ulis Cedex A
France

Phone: +33 (0) 1 69 18 75 75
Fax: +33 (0) 1 69 28 84 91

contact-edps@webofconferences.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

AGRICULTURAL BIG DATA ANALYSIS

Application of Hyperspectral Imaging for Rapid and Nondestructive Detection of Paraffine-Contaminated Rice 01001	1
<i>Mohammad Akbar Faqeerzada, Tanjima Akter, Umuhoza Aline, Muhammad Fahri Reza Pahlawan, Byoung-Kwan Cho</i>	

Implementation of Real-Time Image Processing on Bacterial Cellulose Formation Using Soybean-Boiled Wastewater with the Variation of Carbon Sources During Fermentation 01002.....	9
<i>Ahmad Fatih Marzuki, Darmawan Ari Nugroho, Tyasto Prima Ahmadi, Atris Suyantohadi</i>	

AGRICULTURAL GEOGRAPHY

Analysis of Agricultural Land Carrying Capacity in North Sumatra Province in 2020 02001.....	17
<i>Muhammad Bagus Fitriawan, Nabila Husna Risada, Yosi Yaseva, Ratih Fitria Putri</i>	

Agriculture Carrying Capacity Evaluation of Land Subsidence Area in Yogyakarta Special Province 02002.....	22
<i>Alfindy Juliansari Alam, Azizah Nurkhalifah, Muhammad Zayyin Asrofi, Muhammad Raidan Azani, Ratih Fitria Putri</i>	

Analysis of the Carrying Capacity Agricultural Land of Jawa Tengah Province in 2022 Using the Soemarwoto Method 02003	27
<i>Arianti Ade Maya Dian, Wicaksono Satrio Aji, Muhammad Zayyin Asrofi, Ratih Fitria Putri</i>	

Analysis of the Carrying Capacity of Agricultural Land in South Sulawesi Province 02004	33
<i>Favian Daniswara Nugraha, Syifa Ayulia Anggraini, Muhammad Zayyin Asrofi, Ratih Fitria Putri</i>	

Agricultural Land Monitoring of Land Subsidence Area Using Spatio-Temporal Approach in East Java Indonesia 2018-2022 02005	37
<i>Dyfanry Aurariel Syahda, Melta Meliano Putri, Yosi Yaseva, Putri Yuko Nawang Wulan, Ratih Fitria Putri</i>	

Distribution of Oil Palm Plantations and Their Suitability with Spatial Planning: An Assessment in Aceh, Indonesia 02006	42
<i>Ikhwan Amri, Elsa Widura, Muhammad Iqbal, Yan Andika, Asalia Raudhati Izzatillah</i>	

GIS-Based Assessment of Land Suitability for Rubber Cultivation in Chittagong District, Bangladesh 02007	49
<i>Md. Ahasanul Hoque, Rezwan Ahmed</i>	

The Importance of Livelihood Diversification on Agroforestry Farmers in the Landslide Prone Area: A Case Study in Menoreh Hills Kulon Progo, Indonesia 02008.....	59
<i>Arum Mutiarra Ridyo, Utami Arini Wahyu, Irham Irham</i>	

Women's Roles in Beef Cattle Farming Households in Nagari Lakitan Utara, Pesisir Selatan Regency, Sumatra Barat Province 02009	66
<i>Siti Andarwati, Budi Guntoro, Muhammad Fajri</i>	

LAND AND ENVIRONMENTAL MANAGEMENT

Amelioration of Dry Land Suboptimal Using Biochar and Compost to Improve Soil Physical Properties and Soybean Yield 03001	72
<i>Endriani, Diah Listyarini</i>	
Biodiversity in Lower Montane Forest of Petungkriyono: A Review 03002.....	79
<i>Dian Pratiwi, Tri Wira Yuwati, Sri Lestari, Yonky Indrajaya, Astarina Eka Dewi</i>	
Can iPhone/iPad LiDAR Data Improve Canopy Height Model Derived from UAV? 03003.....	98
<i>Deha Agus Umarhadi, Senawi, Wahyu Wardhana, Emma Soraya, Aqmal Nur Jihad, Fiqri Ardiansyah</i>	
Comparative Effect of Polymer Coating Materials on Physical Properties of NPK Fertilizer Pellet 03004.....	103
<i>Gatot Trimulyadi Rekso</i>	
Crop Pattern Suitability Based on Water Availability in Dry-Land Agriculture Nawungan, Selopamioro, Imogiri, Bantul 03005	108
<i>Khoirida Dian Putranti, Nur Ainun H. J. Pulungan, Makruf Nurudin</i>	
Cross-Sectional Study on Land and Seed of Oil Palm Smallholders in the Western Part of Aceh: Challenge for Sustainability Agenda 03006	114
<i>Ahmad Humam Hamid, Agus Nugroho, Fajri, Agussabti, Litna Nurjannah Ginting, Muhammad Rusdi, Muiyasyir, Akhmad Baihaqi</i>	
Effectiveness Combination of Leucaena Compost and Coconut Shell Biochar on Reduce Soil Compaction and Corn Growth in Ultisol 03007	121
<i>Endriani, Diah Listyarini</i>	
Enhancing Food Operator Intention on Specialty Café Using 3R Waste Management Approach for Eco-Enzyme Production as an Implementation of SDGs 12 (Study on Akkar Specialty Cafés) 03008.....	128
<i>Wahyu Putri Andhini, Darmawan Ari Nugroho, M. Prasetya Kurniawan</i>	
Erosion Control in the Tropical Rainforest Catchments Using Modified Intensive Rehabilitation 03009.....	136
<i>Hatma Suryatmojo, Muhammad Chrisna Satriagasa, Widiyatno, Alifia Dyah Ayu</i>	
Formulating the Direction of Community Land Use to Support the Conservation of Javanese Gibbon (<i>Hylobates Moloch</i>) Habitat at Petungkriyono, Central Java 03010	141
<i>Tri Wira Yuwati, Astarina Eka Dewi, Ahmad Arief Fahmi, Muhammad Ali Imron, Muhammad Tafrichan, Yudistira Soeherman, Sri Lestari, Dian Pratiwi</i>	
Assessment of Surface Runoff Potency Under Tropical Environment for Soil and Water Conservation Planning 03011.....	146
<i>Safira Defiani Khoirotunnisa, Gina Isna Nafisa, Chandra Setyawan, Muchammad Nu'Man, Ngadisih</i>	
Impact of Bamboo-Based Agroforestry Demonstration Plots Based on Farmers' Perceptions 03012	151
<i>Eva Fauziyah, Sanudin, Aditya Hani</i>	
Impact of Glyphosate Contamination on Chemical Properties of Inceptisols Amelioration with Biochar from Rice Husks, Young Coconut Waste, and Bamboo 03013	160
<i>Herviyanti Herviyanti, Amsar Maulana, Arestha Leo Lita, Mimien Harianti, Teguh Budi Prasetyo, Rezha Tri Khurnianto, Pitri Juwita, Ridho Ryswaldi, Syafrimen Yasin</i>	

Plants Suitability for Landslides Mitigation in the Giritengah Catchment Area, Indonesia 03014	169
<i>Satwika Indri Masrianti, Ambar Kusumandari, Hatma Suryatmojo</i>	
Relationship Between Tree Height-Diameter at Breast Height (DBH) and Crown Diameter-DBH of Fruit Trees in Bogor Botanical Gardens 03015	176
<i>Indriani Ekasari, Rifaangga Kurnia</i>	
Retention and Availability of Andisol Soil Phosphorus in Monocultural and Policultural Crop Patterns in Ngablak and Getasan Subdistrict, Magelang and Semarang, Indonesia 03016	183
<i>Elia Laila Rizqiyah, Sri Nuryani Hidayah Utami, Benito Heru Purwanto</i>	
Soil Erodibility: Influencing Factors and Its Relation to Soil Fertility in Nawungan, Selopamioro, Bantul Regency 03017	193
<i>Umi Mar Atus Sholihah, Nur Ainun H. J. Pulungan, Fathi Alfinur Rizqi</i>	
Spatial Distributional of Irrigation Water Quality in Peaty Paddy Field of Paser Regency, East Kalimantan Province, Indonesia 03018	200
<i>Moch Reza Wahyu Abdilah, Sahid Susanto, Chandra Setyawan, Muhamad Khoiruz Zaki, Dehafiyyan Ramadhani</i>	
The Critical Level Mapping of the Infiltration Area in the Northern Part of Banyumanik District, Semarang City, Central Java, Indonesia 03019	207
<i>Ahmad Arfiandi, Wawan Budianta, Esti Handini</i>	
The Effect of Land Cover Changes on Landslides in Grindulu Watershed, Pacitan Regency, East Java 03020	221
<i>Raka Achmad Fauzi, Rika Harini, R. Rijanta</i>	
The Growth and Yield of Upland Rice (<i>Oryza Sativa</i> L.) Applied with Rice Husk Zeolite and N Fertilizer 03021	227
<i>Nelvia, Zulfatri, Idwar, Nursiani Lubis, Ferdi Saputra</i>	
The Impact of Water Management Systems and Biofertilizers on Soybean Production in Type B Tidal Swamp Lands in Kapuas District, Central Kalimantan, Indonesia 03022	233
<i>Kartika Ayu Kinanti, Sri Nuryani Hidayah Utami, Jaka Widada, Hendri Sosiawan, Wahina Anisa Yusuf, Arif Mulyawan</i>	
The Positive Effect of the Forest Environment in the Ecotherapy Healing Forest Program on the Physical and Mental Health After COVID-19 03023	243
<i>Vincencia Septaviani Issera Sulistya Putri, Lies Rahayu Wijayanti, Iswari Nur Hidayati</i>	
Watershed Management and Classification in Thailand 03024	252
<i>Piyapong Tongdeenok</i>	
Yield Gap in Cayenne Pepper Production in South Kalimantan 03025	264
<i>Lelya Pramudyani, Sri N. H. Utami, Taryono, Eka T. S. Putra, Anna Hairani</i>	

PRECISION NUTRITION TECHNOLOGY

Analysis of the Effect of Conveyor Speed in Cryo-Grinding System on Matcha Product Quality 04001	270
<i>Febriana Rias Putri, Anggoro Cahyo Sukartiko, Wagiman, Wahyu Supartono</i>	
Changes of Dark Couverture Chocolate Hardness During Storage Tempered Using Automatic Tempering Machine with Tank and Tempering Temperature as Variables 04002	276
<i>Shiammita Rosmindari, Arifin Dwi Saputro, Nursigit Bintoro</i>	

Extraction and Isolation of Cricket Protein Isolate with Ammonium Sulfate Addition Method and Its Effect on the Functional Properties of the Proteins 04003	284
<i>Edward, Thanakorn Wongprasert, Thasorn Bunyakanchana, Wasin Pattaraprachyakul, Panattida Siripitakpong, Inthawoot Suppavorasatit</i>	
Gas Absorbent Based Modified Atmosphere Packaging to Optimize Dragon Fruit Shelf Life 04004	292
<i>Satria Primatama, Fahrizal Yusuf Affandi, Anisa Kistanti, Musyrifah Kurniawati, Bayu Nugraha</i>	
Palm Oils Consumption Modulates Serum SGPT and SGOT in Rats Fed a High-Fat Diet 04005	303
<i>Zaki Utama, Sri Raharjo, Agnes Murdiati, Andriati Ningrum</i>	
Physical Characteristics of Extrudate from Mixed Corn Gritsoybean Flour with Treatments of Moisture Content and Extruder Barrel Temperature 04006.....	307
<i>Riski Sri Mahanani, Joko Nugroho Wahyu Karyadi, Devi Yuni Susanti, Ailsa Saraswati Samodra, Vincentius Ferry Surya Dwinata, Dian Kharisma Rahmawati, Prasetya Febriyansyech Personanta Sinuhaji</i>	
The Importance of LCA in the Production of Turmeric Powder and Chilli Powder at PT X 04007	313
<i>Dyah Ayu Kurniawati, Wahyu Supartono, Pujo Saroyo</i>	
X-Ray CT Applications to Reveal Physical Defects of Onion During Storage 04008	318
<i>Devi Priyanti, Ira Ayuningsih, An-Nidaa' Fatkhur Rahmah, Sri Rahayoe, Bayu Nugraha</i>	

SMART GENETICS RESOURCE MANAGEMENT AND UTILIZATION

Continental Vs. Tropical Breed: Immunity Comparison Under Heat Stress Conditions Utilizing qRT-PCR Technique 05001	323
<i>Roland Fajardo, Putri Kusuma Astuti, Zoltán Bagi, Lilla Bodrogi, Tímea Pintér, Gabriella Skoda, Husein Ohran, George Wanjala, Szilvia Kusza</i>	
Morphology, Biomass Production, and Nutrient Analysis Four Napier Grass Cultivar (Pennisetum Purpureum Schumach.) in Teak Tree Forest Area Megeri Village, Blora, Central Java 05002	331
<i>Yogi Sidik Prasajo, Mustafa Kamal, Arkan Roja Sukmana, Bowo Dwi Siswoko, Nafiatul Umami</i>	
Tiller Number and Flowering Ability on BC1F1 Progeny of Interspecific Hybridization in Ruzigrass (Urochloa Ruziziensis) 05003.....	335
<i>Yogi Sidik Prasajo, Pattama Nitthaisong, Melody Muguerza, Sukanya Kamphayae, Nafiatul Umami, Genki Ishigaki</i>	

SMART AND PRECISION FARMING

Design and Development Smart Aquaculture in Freshwater Pond Based on Fuzzy Logic 06001	339
<i>Endra Pitowarno, Bagas Oktavianto Leksono, Eko Budi Utomo, Muhammad Muamar</i>	
Development of Automatic Dual Sequence Control Temporary Immersion Bioreactor Systems for Micropropagation Coelogyne Pandurata Lindl. 06002.....	346
<i>Anisa Dewi Rahayu, Lathief Al Umami, Shiddharta Arya Anggoro Cen, Bimo Rizki Abdusshamad, Leonard Sean, Kresna Budiman, Labriyantoko Kurniawan, Muhammad Akhsin Muflikhun, I. Wayan Mustika, Endang Semiarti</i>	
Identification of Maturity Stage of Cacao Using Visible Near Infrared (Vis-NIR) and Shortwave Near Infrared (SW-NIR) Reflectance Spectroscopy 06003.....	351
<i>Riana Listanti, Rudiati Evi Masithoh, Arifin Dwi Saputro, Hanim Zuhrotul Amanah</i>	

Improved Image Recognition Via Synthetic Plants Using 3D Modelling with Stochastic Variations 06004	361
<i>Chris C. Napier, David M. Cook, Leisa Armstrong, Dean Diepeveen</i>	
Innovation Characteristics in Configuring Farmers' Digital Literacy on E-Reporting Polygon in Wukirsari Indonesia 06005	368
<i>Hisna Shania Alya, Widhiningsih Diah Fitria, Subejo</i>	
Multi-Agro: Design and Development of a Cartesian-Based SelfPlantation Robot for Home-Scale Gardens with Mobile App 06006.....	375
<i>Endra Pitowarno, Adytia Darmawan, Fatih Ali Fikri El Munba 'Its, Bagus Pramuditya Affandy</i>	
Performance of a Portable NIR Spectrometer to Distinguish Coffee Species Based on Qualitative Chemometric and Artificial Neural Network (ANN) Models 06007	381
<i>Agus Dharmawan, Rudiati Evi Masithoh, Hanim Zuhrotul Amanah</i>	
Predicting Physicochemical Properties of Melon (Cucumis Melo L.) Using Ultrasonic Technology and Artificial Neural Network 06008	389
<i>Fahar Yazid Izdiyar, Nafis Khuriyati, Wagiman</i>	
Space Based Data Usage for Smart Farming 06009	396
<i>Shin-Ichi Sobue</i>	

SUSTAINABLE FOOD PRODUCTION

Analysis of the Effect of Brand Equity on Purchasing Decision Towards Organic Rice in Special Region of Yogyakarta 07001	403
<i>Nisa Puspita Mawadati, Novita Erma Kristanti, Nafis Khuriyati</i>	
Assessing the Viability of a Small Micro-Enterprise of an Urban Farming Group in Bausasaran Village, Yogyakarta, in Developing a Vegetable-Based Noodle Products 07002	409
<i>Habib Luthfi Ash Shiddiqie, Ryan Anugrah Putra, Ardi Wiranata, Teguh Ariyanto</i>	
Effect of Varying Color LED Lights on Porang (Amorphophallus Muelleri) Bulbil Seed Germination and Porang Plant Vegetative Growth Phase 07003	415
<i>Aryanis Mutia Zahra, Esty Indrayanti, Bayu Dwi Apri Nugroho, Rudiati Evi Masithoh</i>	
Identification of Sustainable Supply Chain Performance in Primary Cocoa Processing (Case Study in Patuk, Yogyakarta) 07004	423
<i>Tasyarafa Shelia Khairani, Muhammad Prasetya Kurniawan, Kuncoro Harto Widodo, Tri Marwati, Titiek Farianti Djaafar</i>	
Nuisance Insects of Rearing Mass Asian Citrus Psyllid (ACP) Diaphorina Citri Under Controlled Conditions 07005	430
<i>Haris Setyaningrum, Edhi Martono, Alan Soffan, Jianhua Mo, Siti Subandiyah</i>	
The Quality Analysis of "JOSS" (Jatisarone Organik Sehat Sejahtera) Organic Rice 07006	434
<i>Hasna Difa Salisa, Novita Erma Kristanti, Anggoro Cahyo Sukartiko</i>	
Using Superior Variety and Application of CI200 to Support Food Security in South Sumatra Swamp Land 07007	439
<i>Waluyo, Agus Suprihatin, Suparwoto, Jumakir</i>	

Author Index