

AGRIVITA

Journal of Agricultural Science

VOLUME 43 (1) February 2021



Agrivita

Published by Faculty of Agriculture Universitas Brawijaya

ISSN: 0126-0537 (Print-Indonesia)
2302-6766 (Printed-English)
2477-8516 (Online)

AGRIVITA Journal of Agricultural Science

AGRIVITA Journal of Agricultural Science is a peer-reviewed, scientific journal published by Faculty of Agriculture Universitas Brawijaya Indonesia in collaboration with Indonesian Agronomy Association (PERAGI). The aims of the journal are to publish and disseminate high quality, original research papers article review and short communication in plant science i.e. agronomy, horticulture, plant breeding, soil sciences, plant protection and other pertinent field related to plant production. AGRIVITA is published three times per year in February, June and October.

The journal is accredited first grade (Sinta 1/S1) based on Decree No: 30/E/KPT/2018 by Ministry of Research, Technology and Higher Education (RistekDikti), The Republic of Indonesia.

AGRIVITA has been indexed in SCImago Journal & Country Rank (SJR), Elsevier Scopus, Emerging Sources Citation Index (ESCI) – Web of Science, Directory of Open Access Journals (DOAJ), ASEAN Citation Index (ACI), Science and Technology Index (SINTA), ProQuest, Dimension and Google Scholar.

EDITORIAL TEAM

Editor in Chief

Prof. Dr. Kuswanto (Scopus ID: 57192702058)
Universitas Brawijaya, Indonesia

Editorial Board

Prof. Dr. Moch. Dawam Maghfoer (Scopus ID: 55440224300)
Universitas Brawijaya, Indonesia

Syahrul Kurniawan, Ph.D (Scopus ID: 55876481800)
Universitas Brawijaya, Indonesia

Dr. Darmawan Saptadi (Scopus ID: 57193852160)
Universitas Brawijaya, Indonesia

Hagus Tarno, Ph.D (Scopus ID: 36163526900)
Universitas Brawijaya, Indonesia

Dr. Akhmad Rizali (Scopus ID: 6507320984)
Universitas Brawijaya, Indonesia

International Editorial Board

Prof. Dr. Widiatmaka
(Scopus ID: 56962708400)

Bogor Agricultural University, Indonesia

Jintana Unartngam, Ph.D
(Scopus ID: 8528493500)

Kasertsat University, Thailand

Dr. Dono Wahyuno
(Scopus ID: 650a7969735)

Indonesian Spice and Medicinal Crops Research
Institute

Seca Gandaseca, Ph.D
(Scopus ID: 35071255800)

Universiti Putra Malaysia, Malaysia

Prof. Dr. Kurniatun Hairiah
(Scopus ID: 6602368888)

Faculty of Agriculture Universitas Brawijaya, Indonesia

Dr. Mohammad Reza Alizadeh
(Scopus ID: 16642292100)

Rice Research Institute of Iran (RRII), Islamic Republic
of Iran

Markus Anda, Ph.D
(Scopus ID: 23024287000)

Indonesian Centre for Agricultural Land Resource
Research and Development

Prof. Anoop Kumar Srivastava
(Scopus ID: 56688989000)

National Research Centre For Citrus, India

Dr. Mohammad Ali Shariati
(Scopus ID: 56096567300)

Orel State Agrarian University, Russian Federation

Dr. Mohammad Valipour
(Scopus ID: 55877297968)

Islamic Azad University, Islamic Republic of Iran

Dr. B. Mohan Kumar
(Scopus ID: 55435104500)

Hiran Anjana Ariyawansa, Ph.D
(Scopus ID: 55752594000)

Prof. Dr. Wani Hadi Utomo
(Scopus ID: 6507144030)

Prof. Dr. Eko Handayanto
(Scopus ID: 6508116842)

Dr. Jay Shankar Singh
(Scopus ID: 16837178200)

Nalanda University, India

National Taiwan University, Taiwan

Faculty of Agriculture Universitas Brawijaya, Indonesia

Faculty of Agriculture Universitas Brawijaya, Indonesia

Babasaheb Bhimrao Ambedkar University, India

Assistant Editor

Silvia Santi Wahyuni

Faculty of Agriculture Universitas Brawijaya, Indonesia

Aini Nur Laila

Faculty of Agriculture Universitas Brawijaya, Indonesia

Endah Apriliani

Faculty of Agriculture Universitas Brawijaya, Indonesia

EDITORIAL ADDRESS

Faculty of Agriculture Universitas Brawijaya

Jl. Veteran Malang 65145 East Java Indonesia

Phone/Fax: +62-341-575743

E-mail : agrivita@ub.ac.id, agrivitafaperta@yahoo.com, agrivitafaperta@gmail.com

Website: <http://www.agrivita.ub.ac.id>

**Editorial Team would like to thank to peer reviewer who has been invited
by Agrivita Journal of Agricultural Science Volume 43 number 1, 2021**

- Dr. Christopher James Barnes (Scopus ID: 57188660566)
(Microbiology - The GLOBE Institute, University of Copenhagen, Denmark)
- Dr. Amira M.I. Mourad (Scopus ID: 57201639989)
(Biotechnology- Assiut University Egypt)
- Dr. Alihan Cokkizgin (Scopus ID: 36701054500)
(Field Crops - University of Gaziantep, Turkey)
- Kurniawan Budiarto, Ph.D. (Scopus ID: 12243097600)
(Genetics and Plant Breeding - Indonesian Citrus and Subtropical Fruits Research Institute, Indonesia)
- Assoc. Prof. Morteza Akbari (Scopus ID: 55332434400)
(Land Sustainability - Ferdowsi University of Mashhad Iran)
- Dr. Dono Wahyuno (Scopus ID: 6507969735)
(Mycology - Indonesian Spice and Medicinal Crops Research Institute, Indonesia)
- Dr. Eko Hanudin (Scopus ID: 57196062767)
(Soil Chemistry - Universitas Gadjah Mada, Indonesia)
- Prof. Djajadi, Ph.D. (Scopus ID: 55204846200)
(Soil Science - Indonesian Sweetener and Fiber Crops Research Institute, Indonesia)
- Dr. Sat Rahayuwati (Scopus ID: 57217079768)
(Entomology - Universitas Prima Indonesia, Indonesia)
- Dr. Soetanto Abdoellah
(Soil Science - Indonesian Coffee and Cocoa Research Institute, Indonesia)
- Dr. Yulia Pujiastuti (Scopus ID: 50262740500)
(Entomology - Universitas Sriwijaya, Indonesia)
- Masruri, Ph.D (Scopus ID: 55387384800)
(Chemistry and Biology - Universitas Brawijaya, Indonesia)
- Nur Edy, Ph.D (Scopus ID: 56966706300)
(Soil Science - Universitas Tadulako, Indonesia)
- Prof. Dr. Fransiscus Xaverius Wagiman
(Pest Ecology - Universitas Gadjah Mada, Indonesia)
- Prof. Dr. Munif Ghulamahdi (Scopus ID: 56237754300)
(Agronomy - Bogor Agricultural University, Indonesia)
- Prof. Dr. Siti Herlinda (Scopus ID: 37107781700)
(Pest and Plant Disease - Universitas Sriwijaya, Indonesia)
- Prof. Dr. Tualar Simarmata (Scopus ID: 6505785217)
(Soil Science - Universitas Padjajaran, Indonesia)
- Prof. Dr. Widiatmaka (Scopus ID: 56962708400)
(Land Resources - Bogor Agricultural University, Indonesia)
- Prof. K.V. Mohanan (Scopus ID: 56625173400)
(Genetics and Plant Breeding - University of Calicut, Chelari, India)
- Ehsan Neamatollahi, Ph.D. (Scopus ID: 36010839900)
(Land Sustainability - Ferdowsi University of Mashhad Iran)
- Prof. Dr. Bambang Tri Rahardjo (Scopus ID: 55969532600)
(Plant Pests and Diseases - Universitas Brawijaya, Indonesia)

TABLE OF CONTENTS

Editorial Team.....	i
Table of Contents.....	iv
Article	
Land Use Planning for Disaster-Prone Areas in Southern Region of Mount Merapi <i>Gunawan Budiyanto</i>	1
Microflora, Provision of Ordinary Chernozem with Nutrients and Barley Productivity when Inoculating the "Agrobionov" Preparation <i>Abilzhan Khussainov, Anar Ayapbergenova, Anara Sarsenova, Yedil Aishuk, and Razya Khussainova</i>	13
Growth Response of Clove (<i>Syzygium aromaticum</i> L.) Seedlings to Different Light and Water Regimes <i>Adi Setiawan, Satoshi Ito, Yasushi Mitsuda, Ryoko Hirata, Kiwamu Yamagishi, and Yasa Palaguna Umar</i> ...	25
Silica Fertilizer (Si) Enhances Sugarcane Resistance to The Sugarcane Top Borer <i>Scirpophaga excerptalis</i> Walker <i>Bambang Tri Rahardjo, Etik Mar`ati Achadian, Achmad Fitriadi Taufiqurrahman, and Mohamad Rizkiy Hidayat</i>	37
Characterization of Clove Oil Nanoparticles and Their Insecticidal Activity against <i>Cryptolestes ferrugineus</i> (Stephens) (Coleoptera: Laemophloeidae) <i>Silvi Ikawati, Toto Himawan, Abdul Latief Abadi, and Hagus Tarno</i>	43
Control of Banana Wilt Disease Caused by <i>Fusarium oxysporum</i> Schlecht f.sp. cubense (E. F. Smith) Using Crab Shell Powder and Chitosan <i>Widodo, Heri Harti, and Suryo Wiyono</i>	56
Antifungal Activities of the Combination of Ulin Wood Liquid Smoke and Hiyung Cayenne Pepper Root Endophytic Fungi Against <i>Colletothricum capsici</i> <i>Witiyasti Imaningsih, Mariana, Ahmad Budi Junaedi, and Rasyidah</i>	69
Application of Mycorrhizae and Beauveria in Organic Farming System Effectively Control Leafminers and Enhance Shallot Production <i>Shahabuddin Saleh, Alam Anshary, Usman Made, Mahfudz, and Muhammad Basir-Cyio</i>	79
Nutritional and Phenolic Antioxidant Properties of Pakistani Wheat Varieties as Influenced by Planting Period and Variety <i>Muhammad Nadeem, Muhammad Mushtaq, Muhamad Farhan Jahangir Chughtai, Adnan Khaliq, Muhammad Imran, Tanweer Aslam Gondal, Mohammad Ali Shariati, Anton Nesterenko, and Dmitriy Kulikov</i>	89
Effects of Foliar Application Chitosan and Salicylic Acid on Physiological Characteristics and Yield under Deficit Irrigation Condition <i>Seyyed Ali Morovvat, Reza Sadrabadi, Koroush Shojaei Noferest, Alireza Souhani Darban, and Mansour Salati</i>	101
Exploration and Antifungal Assay of Endophytic Fungi as Biocontrol of Onion Purple Blotch Disease Caused by <i>Alternaria porri</i> (Ell) Cif In Vitro <i>Wita Firdausi, Liliek Sulistyowati, and Luqman Qurata Aini</i>	114
Local Adaptation to Extreme Weather and It's Implication on Sustainable Rice Production in Lampung, Indonesia <i>Dulbari, Edi Santosa, Yonny Koesmaryono, Eko Sulistyono, Anung Wahyudi, Herdhata Agusta, and Dwi Guntoro</i>	125
Selection Indicators of Yield Components and Yield for Improvement of Local Sweet Potato under Water Stress <i>Helen Hetharie, Simon Hadi Teguh Raharjo, Edizon Jambormias, Reny Tomaso, and Anna Yuliana Wattimena</i>	137
Structure and Composition of Major Arbuscular Mycorrhiza (MA) under Different Farmer Management of Coffee and Pine Agroforestry System <i>Cahyo Prayogo, Dimas Prastyaji, Budi Prasetya, and Novi Arfarita</i>	146
Utilizing Organic Fertilizers on Two Types of Soil to Improve Growth and Yield of Bawang Dayak (<i>Eleutherine americana</i> Merr) <i>Hastin Ernawati Nur Chusnul Chotimah, Adi Jaya, Hairu Suparto, Dewi Saraswati, and Wardi Nawansyah</i> ...	164
Bioinspired Optimization of Germination Nutrients Based on <i>Lactuca sativa</i> Seedling Root Traits as Influenced by Seed Stratification, Fortification and Light Spectrums <i>Ronnie S. Concepcion II and Elmer P. Dadios</i>	174
Exploration of Symbiotic Bacteria of <i>Oryctes rhinoceros</i> (Coleoptera: Scarabaeidae) Larvae from Oil Palm Empty Fruit Bunches <i>Marheni, Edhi Martono, and Octanina Sari Sijabat</i>	190

Increasing the Growth and Development of Chili-Pepper Under Three Different Shading Condition in Response to Biofertilizers Application <i>Didik Hariyono, Fandyka Yufriza Ali, and Agung Nugroho</i>	198
Remediation of Lead-contaminated Farmland Soil: Efficacy of Low-cost Natural Amendments in [Im] mobilization of Lead <i>Himawan, Sentot Budi Rahardjo, Suntoro, and Prabang Setyono</i>	209
Isogenic Lines: Reaction to the Kazakhstan Population of Stem Rust (<i>Puccinia graminis</i> f. sp. tritici) <i>Aikerim Ydyrys, Amageldy Sarbaev, Alexey Morgounov, Saltanat Dubekova, and Vladimir Chudinov</i>	221
Guideline for Contributors to Agrivita Journal of Agricultural Science	App. 1
Partners	App. 2