

---

## **ACKNOWLEDGEMENT**

Editorial journal of PLANTA TROPIKA: Journal of Agro Science would like to give the highest appreciation and thanks to peer reviewers who helped review the manuscripts:

**Innaka Ageng Rineksane, S.P., M.P., Ph.D.**

Faculty of Agriculture, Universita Muhammadiyah Yogyakarta, Indonesia

**Dr. Ir. Eko Hanudin, M.P.**

Faculty of Agriculture, University of Gajah Mada, Indonesia

**Prof. Drs. Sutarno, M.Sc., Ph.D**

Faculty of Mathematics and Natural Sciences, Universitas Sebelas Maret, Indonesia

**Prof. Dr. Gunawan, S.Si., M.Si**

Faculty of Math and Science, Universitas Lambung Mangkurat, Indonesia

**Dr. Ir. Paul Benyamin Timotiuw, M.S.**

Faculty of Agriculture, University of Lampung, Indonesia

**Dr. Eries Dyah Mustikarini, M.Si.**

Faculty of Agriculture, University of Bangka Belitung, Indonesia

**Dr. Prof. Ir. Riwandi, M.S.**

Faculty of Agriculture, University of Bengkulu, Indonesia

**Syamsu Alam, S.P., M.Sc.**

Faculty of Agriculture, Universitas Halu Oleo, Indonesia

**Budy Frasetya TQ, S.T.P., M.P.**

Faculty of Science and Technology, UIN Sunan Gunung Djati Bandung, Indonesia

**Dr. Ir. Benito Heru Purwanto, MP., M.Agr.**

Faculty of Agriculture, University of Gajah Mada, Indonesia

**Prof. Dr. Adriana F. Sestras**

University of Agricultural Sciences and Veterinary Medicine, 3-5 Manastur St., 400372 Cluj-Napoca, Romania

**Dr. Hari Kaskoyo, S.Hut., M.P.**

Faculty of Agriculture, University of Lampung, Indonesia

**Dr. Rahmat Safe'i, S.Hut.,M.Sc.**  
Faculty of Agriculture, University of Lampung, Indonesia

**Prof. Dr. Ir. Muh. Nurcholis M.Agr.**  
Faculty of Agriculture Universitas Pembangunan Nasional Veteran, Indonesia

**Dr. Maimuna La Habi, S.P., M.P.**  
Faculty of Agriculture, Pattimura University, Indonesia

**Sholahuddin, S.P., M.Eng.**  
Department of Life and Materials System Engineering, University of Tokushima, Japan

**Imas Masithoh Devangsari, S.P., M.Sc., Ph.D Cand.**  
School of Environmental Science and Management, University of The Philippines Los Banos

**Dr. Juniarti, S.P., M.P.**  
Faculty of Agriculture, Andalas University, Indonesia

**Dr. Rahmat Budiarto, S.P., M.Si.**  
Faculty of Agriculture, Padjadjaran University, Indonesia

**Ahdiar Fikri Maulana, S.Hut., M.Agr., Ph.D.**  
Faculty of Forestry, Universitas Gadjah Mada, Indonesia

**Dr. Yenni Asbur, S.P., M.P.**  
Faculty of Agriculture, Universitas Islam Sumatera Utara, Indonesia

**Hagia Sophia Khairani, S.P., M.Si.**  
Faculty of Agriculture, IPB University, Indonesia

**Dr. Masanto, S.P., M.Sc.**  
Agricultural Quarantine Agency, Indonesian Ministry of Agriculture

**Prof. Ir. Triwibowo Yuwono, Ph.D.F**  
aculty of Forestry, Universitas Gadjah Mada, Indonesia

**Dr. Aidil Azhar, SP, M.Sc.**  
Vocational School of IPB University, Indonesia

**Suwarti, S.P., M.P.**  
Indonesian Cereal Research Institute

## AUTHORS INDEX

| A                        |     | H                                    |     |
|--------------------------|-----|--------------------------------------|-----|
| Adhy Ardiyanto           | 55  | Hariyono                             | 186 |
| Adi Basukriadi           | 102 | Hastin Ernawati Nur Chusnul Chotimah | 194 |
| Agung Astuti             | 186 | I                                    |     |
| Agung Astuti             | 203 | I Ketut Sardiana                     | 132 |
| Ahmad Jupriyanto         | 169 | Ida Retno Moeljani                   | 126 |
| Akhmad Bustamil          | 203 | Imanta Tarigan                       | 35  |
| Akhmat Sajarwan          | 194 | J                                    |     |
| Alifa Yumna              | 111 | Jaka Widada                          | 69  |
| Almansyah Nur Sinatrya   | 169 | Jamilah                              | 27  |
| Amossius Rompollemba     | 13  | Juni Safitri Muljowati               | 62  |
| Antonius Mau             | 194 | K                                    |     |
| Asih Indah Utami         | 45  | Kafrawi                              | 126 |
| Atiqah Aulia Hanuf       | 111 | Keitaro Tawaraya                     | 45  |
| Aulia Zakia              | 34  | Kiki Yolanda                         | 116 |
| B                        |     | M                                    |     |
| Benito Heru Purwanto     | 45  | Made Jane Mejaya                     | 34  |
| Bruno Borsari            | 92  | Makruf Nurudin                       | 140 |
| Budi Waluyo              | 84  | Margi Asih Maimunah                  | 45  |
| C                        |     | N                                    |     |
| Chindy Ayu Erliana       | 62  | Marianne Reynelda Mamondol           | 13  |
| D                        |     | P                                    |     |
| Dani Widjaya             | 169 | Milda Ernita                         | 27  |
| E                        |     | R                                    |     |
| Edyson                   | 55  | Mufti Petala Patria                  | 102 |
| Eka Oktaviani            | 152 | Mulyono                              | 177 |
| Eko Hanuddin             | 140 | Mulyono                              | 186 |
| Erlintang Ratri Febriana | 177 | Najvania Nawaal                      | 126 |
| Erny Ishartati           | 34  | Ni Gusti Ketut Roni                  | 132 |
| F                        |     | S                                    |     |
| Fani Aulia Diannastiti   | 69  | Ni Wayan Anik Leana                  | 152 |
| Febri Ayu Alista         | 111 | Nur Fitrianto                        | 62  |
| Fitrah Murgianto         | 55  | Penta Suryaminarsih                  | 126 |
| G                        |     | T                                    |     |
| Guniarti                 | 126 | Pienyani Rosawanti                   | 160 |
| Gusti Irya Ichriani      | 194 | Puji Lestari                         | 84  |
| H                        |     | U                                    |     |
|                          |     | Purwanto                             | 152 |
|                          |     | Putu Oki Bimantara                   | 45  |
| I                        |     | V                                    |     |
|                          |     |                                      |     |
| J                        |     | W                                    |     |
|                          |     |                                      |     |
| K                        |     | X                                    |     |
|                          |     |                                      |     |
| L                        |     | Y                                    |     |
|                          |     |                                      |     |
| M                        |     | Z                                    |     |
|                          |     |                                      |     |

|                       |     |
|-----------------------|-----|
| Randy Trinity Nijkamp | 169 |
| Rapialdi              | 27  |
| Ratih Kumalasari      | 140 |
| Retno Meitasari       | 186 |
| Riza Kurnia Sabri     | 45  |
| Rochadi Abdulhadi     | 102 |
| Ruben Tinting         | 194 |
| Rudy Madianto         | 34  |

## S

|                           |     |
|---------------------------|-----|
| Saijo                     | 160 |
| Samijan                   | 1   |
| Samuel Munyaka Kimani     | 45  |
| Saniya Reizta Riyanto     | 111 |
| Santhyami                 | 102 |
| Sarjiyah                  | 203 |
| Siti Samiyarsih           | 62  |
| Soemarno                  | 111 |
| Sri Nuryani Hidayah Utama | 69  |
| Sri Nuryani Hidayah Utami | 45  |
| Sudirman Yahya            | 160 |
| Sudradjat                 | 160 |
| Sufianto                  | 34  |

## T

|                      |     |
|----------------------|-----|
| Tati Budi Kusmiyarti | 132 |
| Taufiq Hidayat       | 177 |

## V

|                  |    |
|------------------|----|
| Valensi Kautsar  | 45 |
| Vina Eka Aristya | 1  |

## W

|                   |     |
|-------------------|-----|
| Wahyu Kusumandaru | 169 |
| Weiguo Cheng      | 45  |

## Y

|               |     |
|---------------|-----|
| Yayat Hidayat | 160 |
|---------------|-----|



# Planta Tropika

Jurnal Agrosains (Journal of Agro Science)

PLANTA TROPIKA : Jurnal Agrosains (Journal of Agro Science) provides a forum for researchers on applied agricultural science to publish the original articles. Planta Tropika published two times a year (February and August) by Universitas Muhammadiyah Yogyakarta in collaboration with Indonesian Association of Agrotechnology / Agroecotechnology (PAGI). Planta Tropika focuses related to various themes, topics and aspects including (but not limited) to the following topics Agro-Biotechnology, Plant Breeding, Agriculture Waste Management, Plant Protection, Soil Science, Post Harvest Science and Technology, Horticulture. Planta Tropika is indexed by DOAJ, Google Scholar, and Portal Garuda. Published article is assigned a DOI number by Crossref. The subscriptions for one year: IDR 350.000.



Association of Agrotechnology / Agroecotechnology (PAGI) is an association that accommodates and becomes a communication media for collaboration between study program managers, all professionals staff and observers in the field of agrotechnology and agroecotechnology in Indonesia

#### Editorial Address

DEPARTMENT OF AGROTECHNOLOGY  
Faculty of Agriculture, Universitas Muhammadiyah Yogyakarta  
Jl. Brawijaya, Tamantirto, Kasihan, Bantul  
Telp (0274) 387646 psw 224  
Email: [plantatropika@umy.ac.id](mailto:plantatropika@umy.ac.id)  
Website: <http://journal.umy.ac.id/index.php/pt>

