

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING*

Judul Karya Ilmiah : Inventory and Biodiversity Medicinal Plants of Dayak Tomun Society in Lopus Village Lamandau Regency Central Kalimantan

Jumlah Penulis : 3 orang

Status Pengusul : penulis ke-3

Identitas Makalah : a. Judul Prosiding : The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its Application
26 September 2018, Central Java, Indonesia

b. ISBN/ISSN :

c. Tahun terbit, Tempat pelaksanaan : 17 June 2019, Semarang

d. Penerbit/Organizer : Published under licence by IOP Publishing Ltd

e. Alamat repository PT/ web repository : <https://iopscience.iop.org/article/10.1088/1742-6596/1217/1/012177>

f. Terindeks doi (jika ada) : 10.1088/1742-6596/1217/1/012177

Kategori Publikasi Makalah : Prosiding Forum Ilmiah Internasional
(beri tanda V pada kategori yang tepat) Prosiding Forum Ilmiah Nasional

Hasil Penulisan Peer Review

Komponen Yang Dinilai	Nilai Maksimum Prosiding		Nilai Akhir Yang Diperoleh
	Internasional <input checked="" type="checkbox"/>	Nasional <input type="checkbox"/>	
a. Kelengkapan Unsur Isi Buku (10%)	1.5		1,2
b. Ruang lingkup dan kedalaman pembahasan (30%)	4.5		4,2
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	4.5		4,4
d. Kelengkapan unsur dan kualitas terbitan /jurnal (30%)	4.5		3,4
Total = 100%	15		13,2
Nilai pengusul			

Catatan penilaian artikel oleh reviewer :

kelengkapan unsur isi buku baik, ruang lingkup & kedalaman pembahasan, kelengkapan data & informasi & metode baik, kelengkapan unsur & waktu terbitan cukup, referensi & editor semua dari Indonesia ?

Semarang,
Reviewer 2

Prihastanti

Dr. Erma Prihastanti, M.Si
NIP. 196802191991032001
Bidang ilmu/Unit kerja : Biologi/ Dep. Biologi FSM

* dinilai oleh dua Reviewer secara terpisah
**coret yang tidak perlu
*** nasional/ terindeks di DOAJ, CABI, Copernicus

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING*

Judul Karya Ilmiah : Inventory and Biodiversity Medicinal Plants of Dayak Tomun Society in Lopus Village Lamandau Regency Central Kalimantan

Jumlah Penulis : 3 orang

Status Pengusul : penulis ke-3

Identitas Buku :

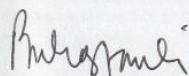
- a. Judul Prosiding : The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its
- b. ISBN/ISSN :
- c. Tahun terbit, Tempat pelaksanaan : 17 June 2019, Semarang
- d. Penerbit/Organizer : Published under licence by IOP Publishing Ltd
- e. Alamat repository PT/ web repository : <https://iopscience.iop.org/article/10.1088/1742-6596/1217/1/012171>
- f. Terindeks doi (jika ada) : <https://doi.org/10.1088/1742-6596/1217/1/012171>

Kategori Publikasi Karya Ilmiah : Prosiding Forum Ilmiah Internasional
(beri tanda V pada kategori yang tepat) Prosiding Forum Ilmiah Nasional

Hasil Penulis Peer Review

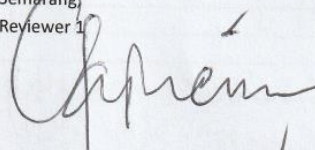
Komponen Yang Dinilai	Nilai Akhir yang Diperoleh		Rata-rata
	Review 1	Review 2	
a. Kelengkapan Unsur Isi Buku (10%)	1,5	1,2	1,35
b. Ruang lingkup dan kedalaman pembahasan (30%)	4,3	4,2	4,25
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	4,1	4,4	4,25
d. Kelengkapan unsur dan kualitas terbitan /jurnal (30%)	2	3,4	2,7
Total = 100%	11,9	13,2	12,55
Nilai pengusul			

Reviewer 1



Dr. Erma Prihastanti, M.Si
NIP. 196802191991032001
Bidang ilmu/Unit kerja : Biologi/ Dep. Biologi FSM

Semarang
Reviewer 1



Prof. Dr. Tri Retnaningsih Soeprbowati, M.App.Sc
NIP. 196404291989032001
Bidang ilmu/Unit kerja : Biologi/ Dep. Biologi FSM

* dinilai oleh dua Reviewer secara terpisah

**coret yang tidak perlu

*** nasional/ terindeks di DOAJ, CABI, Copernicus

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING*

Judul Karya Ilmiah : Inventory and Biodiversity Medicinal Plants of Dayak Tomun Society in Lopus Village Lamandau Regency Central Kalimantan

Jumlah Penulis : 3 orang

Status Pengusul : penulis ke-3

Identitas Makalah :

- a. Judul Prosiding : The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its Application
26 September 2018, Central Java, Indonesia
- b. ISBN/ISSN :
- c. Tahun terbit, Tempat pelaksanaan : 17 June 2019, Semarang
- d. Penerbit/Organizer : Published under licence by IOP Publishing Ltd
- e. Alamat repository PT/ web repository : <https://iopscience.iop.org/article/10.1088/1742-6596/1217/1/012171/pdf>
- f. Terindeks doi (jika ada) : <https://doi.org/10.1088/1742-6596/1217/1/012171>

Kategori Publikasi Makalah : Prosiding Forum Ilmiah Internasional
(beri tanda V pada kategori yang tepat) Prosiding Forum Ilmiah Nasional

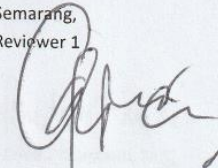
Hasil Penulisan Peer Review

Komponen Yang Dinilai	Nilai Maksimum Prosiding		Nilai Akhir Yang Diperoleh
	Internasional	Nasional	
a. Kelengkapan Unsur Isi Buku (10%)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1.5
b. Ruang lingkup dan kedalaman pembahasan (30%)	1.5		4.3
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	4.5		4.1
d. Kelengkapan unsur dan kualitas terbitan /jurnal (30%)	4.5		2
Total = 100%	15		
Nilai pengusul			11.9

Catatan penilaian artikel oleh reviewer :

*Ini lingkup penelitian menarik, potensi biodiversitas
sangat banyak di Kalimantan - 2 Pengerusi & 1 anggota.
Prosedur terindeks Scopus. Hanya peserta yang mendaftar
dari Indonesia. Peserta 85 4 negara (6 negara)*

Semarang,
Reviewer 1



Prof. Dr. Tri Retnaningsih Soeprbowati, M.App.Sc
NIP. 196404291989032001
Bidang ilmu/Unit kerja : Biologi/ Dep. Biologi FSM

* dinilai oleh dua Reviewer secara terpisah

**coret yang tidak perlu

*** nasional/ terindeks di DOAJ, CABI, Copernicus

PAPER • OPEN ACCESS

The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its Application

To cite this article: 2019 *J. Phys.: Conf. Ser.* **1217** 011001

View the [article online](#) for updates and enhancements.



IOP | ebooks™

Bringing you innovative digital publishing with leading voices to create your essential collection of books in STEM research.

Start exploring the collection - download the first chapter of every title for free.

PREFACE

The 8th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application (ISNPINSA-8) is annual seminars organized by Faculty of Sciences and Mathematics (FSM) Diponegoro University and has been successfully conducted since 2011. The ISNPINSA-8 was held in Semarang, Indonesia on September 26th 2018. The aims of ISNPINSA are to facilitate brain storming and state of the art information in field of sciences and mathematics; to increase innovation of technology that can be applied in industries; to contribute in formulating strategy to increase the role of science for community; and to stimulate collaboration between industries, researchers and government to increase community welfare. The theme of 8th ISNPINSA in 2018 is “*Science and Applied Science for Sustainable Development Goals*”.

The number of participants of the seminar were 272 including keynote speakers, invited speakers, oral presenters, poster presenters, and non presenters coming from various institutions of various countries, including Japan, Philippines, Thailand, Malaysia, Australia, Bangladesh, China, Kazakhtan, Vietnam and those who come from all parts of Indonesia consist of researchers, lecturers, postgraduate and undergraduate students from various universities. There are 272 papers were presented in this seminar, consist of 5 keynote speakers, 237 oral presentations, and 30 poster presentations. After the selection process, there are 184 articles selected papers to be published in the present conference proceeding. This is the largest number of papers and participants for eight times the implementation of ISNPINSA. The scope of the field of participants comes from various fields including biology, physics, chemistry, statistics, mathematics, informatics, environment, public health, and relevant fields that contribute to sustainable development.

The Editors

Dr.Eng. Ali Khumaeni Sapto
Purnomo Putro, Ph.D. Rully
Rahadian, Ph.D.



Content from this work may be used under the terms of the [Creative Commons Attribution 3.0 licence](https://creativecommons.org/licenses/by/3.0/). Any further distribution of this work must maintain attribution to the author(s) and the title of the work, journal citation and DOI.

CONFERENCE PHOTOGRAPHS



Opening ceremony by Dr.Eng. Ali Khumaeni (Chairman of The 8th ISNPINSA 2018)



Welcoming speech by Prof. Dr. Widowati (Dean of Faculty of Science and Mathematics, Diponegoro University)



Welcoming speech by Prof. Dr. Ambariyanto, M.Sc (Vice Rector of Research and Innovation, Diponegoro University)



Photo session (Vice Rector of Diponegoro University, Dean of Faculty of Science and Mathematics, Keynote Speakers, and Committee)



Photo session (Organizing Committee)



Plenary Session by Prof. Kaemwich Jantama, Ph.D. (Suranaree University of Technology, Thailand)



Plenary Session by Prof. Dr Henk Heijnis (Australian Nuclear Science and Technology Organization (ANSTO), Australia)

PEER REVIEW STATEMENT

“All papers published in this volume of Journal of Physics: Conference Series have been peer reviewed through processes administered by the Editors. Reviewers were conducted by expert referees to the professional and scientific standards expected of a proceedings journal published by IOP Publishing.”

LIST OF REFEREES AND EDITORS

1. Prof. Dr. Widowati
2. Prof. Mustafid, Ph.D.
3. Prof. Dr. Wahyu Setia Budi
4. Prof. Dr. Heri Sutanto
5. Sapto P Putro, Ph.D.
6. Dr. Jafron W. Hidayat
7. Dr. Munifatul Izzati
8. Dr. Budi Warsito
9. Dr. Eng. Ali Khumaeni
10. Dr. Di Asih I Maruddani
11. Dr. Muhammad Nur, DEA
12. Dr. Kusworo Adi
13. Dr. Endang Kusdiyantini, DEA
14. Rully Rahadian, Ph.D.
15. Anto Budiharjo, Ph.D.
16. Dr. Tri Retnaningsih Soeprobowati
17. Ismiyanto, Ph.D.
18. Dr. Retno Ariadi Lusiana
19. Dr. Tarno
20. Dr. Eng. Adi Wibowo
21. Dr. Sutimin
22. Alan Prahutama, M.Si
23. Dr. Rukun Santoso
24. Dr. Redemtus Heru Tjahyana
25. Dinar Mutiara Kusumo Nugraheni, Ph.D.
26. Dr. Titik Widiharih
27. Dr. Hermin Pancasakti
28. Dr. Agung janika Sitasawi
29. Dr. Erma Prihastanti
30. Heri Sugito, M.Si.
31. Fajar Ariyanto, M.Si.
32. Dr. Udi Harmoko
33. Dr. Rahmat Gernowo

LIST OF SPEAKER**Keynote Speaker:**

Prof. Elmer S. Estacio, Ph.D.

National Institute of Physics, University of the
Philippines, Manila, Philippines

Prof. Dr. Kazuyoshi Kurihara

University of Fukui, Japan

Prof. Dr. Kaemwich Jantama, Ph.D.

Suranaree University of Technology, Thailand

Prof. Dr. Hendrik Heijnis

Australian Nuclear Science and Technology,
Australia

Prof. Dr. I Gede Wenten

Institut Teknologi Bandung, Indonesia

Invited Speaker:

Dr. Retno Kusumaningrum
Sutimin

Diponegoro University, Semarang, Indonesia Dr.

Prof. Dr. Heri Sutanto

Diponegoro University, Semarang, Indonesia

Vincensius Gunawan, Ph.D.

Diponegoro University, Semarang, Indonesia

Rahadian, Ph.D.

Diponegoro University, Semarang, Indonesia Rully

Dr.rer.nat. Anto Budiharjo

Diponegoro University, Semarang, Indonesia

Pratama Jujur Wibawa, Ph.D.

Diponegoro University, Semarang, Indonesia Dr.

Nor Basid Prasetya

Diponegoro University, Semarang, Indonesia

Dr. Rukun Santoso

Diponegoro University, Semarang, Indonesia

LIST OF COMMITTEE

Steering Committee:

Prof. Dr. Muhammad Zainuri, *Diponegoro University, Indonesia*
Prof. Dr. Widowati, *Diponegoro University, Indonesia* **Prof. Dr. Heru Susanto**, *Diponegoro University, Indonesia* **Dr. Muhammad Nur**, *Diponegoro University, Indonesia*
Prof. Dr. Wahyu Setia Budi, *Diponegoro University, Indonesia*
Prof. Dr. Mustafid, *Diponegoro University, Indonesia*
Sapto Purnomo P, Ph.D, *Diponegoro University, Indonesia*

Organising Committee:

Dr.Eng. Ali Khumaeni, S.Si. M.E. (Chairman)
Rully Rahadian, SSi, MSi, PhD (Vice-Chairman I)
Dr. Di Asih I Maruddani, S.Si, M.Si (Vice-Chairman II)
Dr. R. Heru Tjahjana (Member)
Dr. Tarno, M.Si (Member)
Dr. Susilo Haryanto (Member) **Yayuk Astuti, Ph.D** (Member) **Adi Darmawan, Ph.D** (Member)
Agus Setyo Utomo, M.M (Member)
Dewi Kusriani, M.Si. (Member)
Dr. Kusworo Adi, M.T (Member)
Dr. Dwi Hadiyanti, M.Si (Member) **Dr. Endah D Hastuti, M.Si** (Member) **Farikhin, Ph.D** (Member)
Ragil Saputro, M.T (Member)
Dra. Dwi Ispriyanti, M.Si (Member)
Heri Sugito, M.Sc (Member) **Alan Prahutama, M.Si** (Member) **Fajar Arianto, M.Si** (Member)
Bagus Rahmawan Trianto, S.Kom (Member)
Alik Maulidiyah, S.Si (Member)

This site uses cookies. By continuing to use this site you agree to our use of cookies. To find out more, see our [Privacy and Cookies policy](#).



Table of contents

Volume 1217

2019

[Previous issue](#) [Next issue](#)

**The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its Application
26 September 2018, Central Java, Indonesia**

[View all abstracts](#)

Accepted papers received: 27 March 2019

Published online: 17 June 2019

Preface

OPEN ACCESS

011001

The 8th International Seminar on New Paradigm and Innovation on Natural Science and Its Application

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

011002

Peer review statement

[View abstract](#) [View article](#) [PDF](#)

Papers

OPEN ACCESS

012001

2D electrical resistivity imaging based on backpropagation artificial neural network

A Setyawan, M S Fikri, J E Suseno and Najib

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012002
Application of waste water treatment technology from exhaust electroplating and anodizing process using electro-coagulation method
S S Rahayu, V S A Budiarti, B Sumiyarso, A Amrul and E Triyono
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012003
Growth and fabrication of 850 nm AlGaAs/GaAs vertical cavity surface emitting laser structure
N I Cabello, P M Tingzon, H A Husay, J D Vasquez, R Jagus, K L Patrocenio, K C Gonzales, G A Catindig, E A Prieto, A Somintac, A Salvador and E Estacio
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012004
Rapid identification of impurity in the material surface using mesh-assisted laser-induced plasma technique utilizing pulse CO₂ laser
A Khumaeni and W S Budi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012005
Fabrication and tensile properties of bamboo micro-fibrils (BMF)/poly-lactic acid (PLA) green composite
D Puspita, L Musyarofah, E Hidayah and Sujito
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012006
Optimization of ozone capacity produced by DBD plasma reactor: dedicated for cold storage
I Zahar, Sumariyah, E Yuliyanto, F Arianto, Yuliani, M Puspita and M Nur
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012007
Effect of ozone technology applications on physical characteristics of red cayenne pepper (*Capsicum frutescens* L.) preservation
E Sasmita, M Restiwijaya, E Yulianto, Yuliani, F Arianto, A W Kinandana and M Nur
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012008
Tensile properties of coir and fleece fibers reinforced poly-lactic acid hybrid green composites
L Musyarofah, D Puspita, E Hidayah and Sujito

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012009

Effect of mercerized surface treated natural fiber to the tensile properties of green composite

E Hidayah, L Musyarofah, D Puspita and Sujito

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012010

The comparison of ozone production with dielectric barrier discharge plasma reactors series and parallel at atmospheric pressure

A W Kinandana, E Yulianto, A D Prakoso, A Faruq, A Qusnudin, M Hendra, E Sasmita, M Restiwijaya, S H Pratiwi, F Arianto and M Nur

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012011

Effect of duty cycle on ozone production using DBDP cylindrical reactor

E Yulianto, R Aryadi, I Zahar, E Sasmita, M Restiwijaya, AW Kinandana, F Arianto and M Nur

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012012

Characterization and effect of atmospheric corona plasma on grey knit polyester fabric

Z Muhlisin, S N Hasan, U N Rizki, A S Tajibnafis and F Arianto

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012013

The modeling of 80 mm diameter cross flow turbine runner for mini/microhydro environmentally friendly powerplant

Purwanto, Budiyo and Hermawan

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012014

Analysis of non-Newtonian lubricated textured contact for mixed slip/no-slip configuration considering cavitation

A W Pratomo, Muhammad, M Tauviqirrahman, J Jamari and A P Bayuseno

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012015

Reservoir characterization by petrophysical analysis and core data validation, a case study of the "x" field prospect zone

M A Oetomo, U Harmoko and G Yuliyanto

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012016

Synthesis and characterization of silicone rubber composite silica as the x-ray shielding

S Y Astuti, H Sutanto, G W Jaya, E Hidayanto and Z Arifin

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012017

Effect of pressure of laser-induced plasma spectroscopy for zinc element identification in multivitamin

S N Achmad, As Y Wardaya and A Khumaeni

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012018

Analysis of calcium element in concrete using laser-induced breakdown spectroscopy

B S Hartadi and A Khumaeni

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012019

Synthesis of colloidal copper nanoparticles using pulse laser ablation method

C M Satriyani and A Khumaeni

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012020

Detection of sodium aerosol using laser induced breakdown spectroscopy

Z Alhamid and A Khumaeni

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012021

Application of MCNP for determining the distribution of absorbed dose in lung brachytherapy by using radiation $\gamma^{131}\text{Cs}$

E Setiawati, Y Pratama and M Azam

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012022

An investigation of a CT noise reduction using a modified of wiener filtering-edge detection

C Anam, T Fujibuchi, T Toyoda, N Sato, F Haryanto, R Widita, I Arif and G Dougherty

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012023
Influence of high nitrogen doping on optical properties of ZnO thin films
G F Sianipar and H Sutanto
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012024
Calculation application of patient's dose on fluoroscopy x-ray machine
Z Arifin, E Hidayanto and Suhardi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012025
Determination of ion wind velocity using the method of characteristics (MOC) and its application for drying of black turmeric (*Curcuma aeruginosa Roxb*) slices
Sumariyah, A Khuriati, E Fachriyah and S H Pratiwi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012026
DDBD ozone plasma reactor generation: the proper dose for medical applications
M Azam, M Restiwijaya, A Z Zain, S. Sumariyah, E Setiawati, V Richardina, A R Hendrini, B Dayana, A W Kinandana, F Arianto, K N Bintang, Y Putri, Y K Valas and M Nur
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012027
Method of fluorescence polarization for a new alternative tool for investigation of cooking oil and lard
M Azam, I Afiefah, R W Septianti, N K Putri, H Sugito and K S Firdausi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012028
Reducing coal consumption by people empowerment using local waste processing unit
S Legino, R Hidayawanti, I S Putra and A Pribadi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012029
Zoning landslide vulnerable area according to geological structure, slopes, and landuse parameters In Trangkil Sukorejo Gunungpati Semarang City's Residential Area
T Yulianto, S Suripin and H Purnaweni
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012030

Contribution of electro-optics effect on canola oil as a new alternative method for determination of oil quality using transmission and fluorescence polarization

I Afiefah, M Azam, H Sugito and K S Firdausi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012031

Modeling of semarang fault zone using gravity method

M I Nurwidyanto, T Yulianto and S Widada

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012032

Richardson number model for turbulence motion analysis around airport runway

R Gernowo, H D Saputro, A Setiawan, K Adi and A P Widodo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012033

Finger Edge Contour Perimeter as a Biometric Based Identification System

C E Widodo and K Adi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012034

MulticolorSymmetricalFractalPatternGenerator

C E Widodo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012035

Evaluation of dose radiation on x-ray radiography

Z Arifin, E Hidayanto, B Rahayuningsih and A A Putri

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012036

Detecting driver drowsiness using total pixel algorithm

K Adi, A P Widodo, C E Widodo, A B Putranto, S Naqiyah and H N Aristia

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012037

Analysis of noise levels caused by various types of trains

A Margiantono

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012038
The biodegester flow distribution control system using pressure sensor MPX5700AP
A N D Mufidah, A Setyawan, I Gunadi and J E Suseno
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012039
Determination of bed rock depth using joint geoelectric and HVSR methods
G Yuliyanto, U Harmoko and S Widada
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012040
Subsurface structure investigation of Sangubanyu geothermal field
U Harmoko, G Yulianto, S Widada, A R Ekasara and Y D Herlambang
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012041
The possibility of geothermal permeability detection by using seismic refraction method
U Harmoko, G Yulianto and R D Indriana
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012042
3D Gravity Data Modelling for Determining a Subsurface structure of The SDP Geothermal Field
T Meilasandi, A Sugianto, R D Indriana and U Harmoko
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012043
Identification of the geological structure on the NPR Geothermal Area based on 3D Modeling Gravity Data
N P Rizaldi, R Dewi, R D Indriana and U Harmoko
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012044
Characteristic of silicone rubber as radioprotection materials on radiodiagnostic using x-ray conventional
H Sutanto, G WJaya, E Hidayanto and Z Arifin
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012045

Synthesis of titanium dioxide-silica-silver composites using a base catalyst as active antibacterial compound coated on the cotton fabric

Shinta Dian Lestari, Nor Basid Adiwibawa Prasetya, Ngadiwiyan, Ismiyanto and Purbowatiningrum Ria Sarjono

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012046

Membrane technology in air pollution control: prospect and challenge

A.A.I.A.S. Komaladewi, P.T.P. Aryanti, I D.G.A. Subagia and I G. Wenten

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012047

Nutrition Assessment of "*Kamir*" – typical food of Pemalang, Central Java Province, Indonesia

L D Saraswati, F Arifan, F Muhammad, RAD Yuliana and C Nissa

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012048

Nutrition Measurement of "*Grombyang*" – unique dishes of Pemalang, Central Java Province, Indonesia

L D Saraswati, F Arifan, F Muhammad, RAD Yuliana and C Nissa

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012049

Nutrition Analysis of "*Ogel-ogel*" –typical snack originally from Pemalang, Central Java Province, Indonesia

L D Saraswati, F Arifan, F Muhammad, D Arumavriante and C Nissa

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012050

Identification and determination of phenolic acids content in mango "golek" leaves ethanol extract

A Khasan, E Fachriyah and D Kusriani

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012051

Identification of Phenolic acid from ethanol extract leaves binahong (*Anredera cordifolia* (ten) stennis) and antioxidant activity test

E Fachriyah, T Ayu and D Kusriani

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012052
Chemical oxygen demand (COD) degradation of herbal, tofu and fertilizer wastewater using UV/Ozone oxidation methods
Hadiyanto, Silviana, N PAdetya, M E Pratiwi and A D Aripatama
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012053
Ab initio computational study of electronic structure part-1: reaction mechanism of peptide bond formation between amino acid alanine and glycine
A Dzikrullah, B Cahyono, M D Laksitorini and P Siahaan
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012054
Ab Initio Computational Study of electronic structure of -O-C Bonding Formation on Chitosan Polymer- Part 1: Effects of NaOH
Shella V Yuliani, S N M Salimah, Dwi Hudiyantri, Marlyn Dian Laksitorini and Parsaoran Siahaan
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012055
Activated carbon from teak wood, jackfruit wood, and mango wood pyrolysis process
R D Ratnani, F H Purbacaraka, I Hartati and I Syafaat
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012056
Routh-hurwitz criterion and bifurcation method for stability analysis of tuberculosis transmission model
R Mahardika, Widowati and YD Sumanto
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012057
Local stability analysis of an influenza virus transmission model case study: tondano health center in pekalongan city
F S Rosyada, Widowati and S Hariyanto
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012058
Survival function model estimation for parkinson disease using independent metropolis- hasting's algorithm with uniform proposal distribution in bayesian inference
R Setiawan, S Abdullah and A Bustamam
[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012059
Implementation of Lyapunov method to analyze the stability of pompano, cantang growth and nutrition dynamical systems
Widowati, S P Putro, N Maan and R Sulpiani
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012060
Quadratic programming model for optimal decision making of supplier selection problem integrated with inventory control problem
D U H E Hakim, Sutrisno and Widowati
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012061
Potential environmental pressures on water availability in Gembong reservoir in Pati District for the development of agropolitan area
Kartono, Purwanto and Suripin
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012062
Application of the Crystallographic tiling to Increase Competitiveness of the Sand Sediments
Kartono, R H S Utomo, P S Sasongko and T Udjiani
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012063
The parameter estimation of conditional intensity function temporal point process as renewal process using Bayesian method and its application on the data of earthquake in East Nusa Tenggara
L Jatiningsih, Respatiwan, Y Susanti, S S Handayani and Hartatik
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012064
On total edge irregularity strength of dove tail graph with pendant vertices and its subdivision
E Nurdini and I Rosyida
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012065
Serret-Frenet Multi-Agent System with optimal control approach
R H Tjahjana and R H S Utomo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012066

On clean neutrosophic rings

Suryoto, Harjito and T Udjiani
SRRM

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012067

Normal elements on the generalized moore penrose inverse

T Udjiani SRRM, S Zaki, Suryoto and Harjito

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012068

The characteristics of the Moore-Penrose inverse using the Drazin inverse

F A Mansuri, T Udjiani SRRM, Sutimin, Suryoto and U Tarmizi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012069

Applied Drazin Inverse to Moore-Penrose inverse in rings with involution

U Tarmizi, T Udjiani SRRM, S Hariyanto, Harjito and F A Mansuri

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012070

Subspace of $M_n(\mathbb{Z}_2)$

Yanita and A Adrianda

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012071

Tuberculosis transmission with relapse in Indonesia: susceptible vaccinated infected recovered model

P Widyaningsih, A A Nugroho, D R S Saputro and Sutanto

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012072

Linear Programming with Fuzzy Variable Method for Solving Wastewater Treatment Plant (WWTP) Problem

T R Pratiwi, Sunarsih and B Surarso

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS 012073

A combination of Rivest Shamir Adlemann (RSA) and Affine Cipher method on improvement of the effectiveness and security of text message

M Jannah, B Surarso and Sutimin

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012074

Analysis of mathematical model of HIV-1 infection of CD4⁺ T cells with CTL response and antiretroviral treatment

Sutimin, Sunarsih and Heru Thahjana

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012075

The effect of extreme asset prices to the valuation of zero coupon bond with jump diffusion processes

D A I Maruddani, Abdurakhman and D Safitri

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012076

The feed forward neural network with genetic algorithm for daily stock prediction

R Dipinto, R Santoso and A Prahutama

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012077

Bayesian inference for the finite gamma mixture model of income distribution

I Susanto, N Iriawan, H Kuswanto and Suhartono

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012078

Frank copula on value at risk (VaR) of the construction of bivariate portfolio (Case Study: stocks of companies awarded with the IDX top ten blue with stock period of 20 October 2014 to 28 February 2018)

J A Handini, D A I Maruddani and D Safitri

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012079

Forecasting with Feed Forward Neural Network model and adaptive simulated annealing algorithm (Case: world crude oil prices that was published by OPEC)

A Hanafie, Sugito, Sudarno and A R Hakim

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012080
Modeling of red onion production in Central Java using hybrid ARIMA-ANFIS
I H Diarsih, Tarno and A Rusgiyono
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012081
Comparing Merton model and Gram-Charlier model to capture skewness and kurtosis on bond performance
Abdurakhman and D A I Maruddani
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012082
Predicting currency crisis in Indonesia based on real output and Indonesia Composite Index (ICI) indicators
Sugiyanto, E Zukhronah, I Slamet and M Setianingrum
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012083
Adaptive Neuro Fuzzy Inference System (ANFIS) approach for modeling paddy production data in Central Java
Tarno, A Rusgiyono and Sugito
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012084
Formation of stock portfolio using Markowitz method and measurement of Value at Risk based on generalized extreme value (Case study: company's stock The IDX Top Ten Blue 2017, Period 2 January - 29 December 2017)
R E Situmorang, D A I Maruddani and R Santoso
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012085
Busy period density of M/1 queueing system through lattice path approach: a special case ^{C^b}₂
I Slamet, P N Hidayati, S Wibowo and E Zukhronah
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012087
Gold price modeling in Indonesia using ARFIMA method
D Safitri, Mustafid, D Ispriyanti and Sugito
[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012088
Nonpoisson queueing analysis of patas bus on the west and east line at Tirtonadi Surakarta bus station
M Asri, Sugito, A Hoyyi and A R Hakim
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012089
Exchange rate volatility and exports: a panel data analysis for 5 ASEAN countries
S Subanti, A R Hakim, A L Riani, I M Hakim and M S Nasir
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012090
Generalized extreme value distribution for value at risk analysis on gold price
N Pratiwi, C Iswahyudi and R I Safitri
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012091
Contribution Indonesian Composite Index in PT Telekomunikasi Indonesia stock price model using 2-dimensional Geometric Brownian Motion
A Hoyyi, Tarno, D A I Maruddani and R Rahmawati
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012092
GARCH-family for measuring price fluctuation risk of harvested dry grain in Pemalang district
R Rahmawati, A Rusgiyono, A Hoyyi and D A I Maruddani
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012093
Valuing risk of changes on corn (*zea mays*) prices by considering skewness and kurtosis parameters
R Rahmawati, Tarno, D A I Maruddani and A Hoyyi
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012094
Comparison of generalized cross validation and unbiased risk method for selecting optimal knot in spline truncated
A R Devi, R F W Pratama and Suparti
[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012095
Inventory control model using exponential smoothing control chart
Mustafid, D Ispriyanti, Sugito and D Safitri
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012096
Analysis of aquaculture leading commodities in Central Java using Location Quotient and Shift Share methods
D Manullang, A Rusgiyono and B Warsito
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012097
Locally D-optimal design for weighted exponential model and its computation
T Widiharh, A Rusgiyono, Sudarno, M A Mukid and A Prahutama
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012098
Random forest prognostic factor in colorectal cancer
G Anuraga, J W Fernanda and Pebrianty
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012099
Robust geographically weighted regression with least absolute deviation (case study: the percentage of diarrhea occurrence in semarang 2015)
I C Nurhayati, B Warsito, H Yasin and A Rusgiyono
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012100
Credit scoring analysis using pseudo nearest neighbor
H Pratiwi, M A Mukid, A Hoyyi and T Widiharh
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012101
Particle swarm optimization versus gradient based methods in optimizing neural network
B Warsito, H Yasin and A Prahutama
[View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012102
Non-Poisson queueing model's identification (Case study: AKAP and AKDP bus on the West Lines bus service of Tirtonadi Surakarta)

A P Wrediningsih, Sugito, A Prahutama and A R Hakim

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012103

Classification tide levels in Semarang City use support vector machine

Sugito, D Safitri, Mustafid, D Ispriyanti and A Prahutama

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012104

Spatial autoregressive with a spatial autoregressive error term model and its parameter estimation with two-stage generalized spatial least square procedure

D R S Saputro, R Y Muhsinin, P Widyaningsih and Sulistyaningsih

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012105

Modeling longitudinal data based on Fourier regression

Suparti, R Santoso, A Prahutama, A R Devi and Sudargo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012106

Analysis of space and classification poverty in Semarang City using spatial-logistic regression

D Ispriyanti, A Prahutama and Mustafid

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012107

The stochastic model of rice price fluctuation in Indonesia

Respatiwulan, D Prabandari, Y Susanti, S S Handayani and Hartatik

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012108

Modelling rice production in Central Java using semiparametric regression of local polynomial kernel approach

T W Utami, A Prahutama, A Karim and A R. F Achmad

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012109

Risk factor analysis of hypertension with logistic regression and Classification and Regression Tree (CART)

J W Fernanda, G Anuraga and M A Fahmi

[View abstract](#) [View](#) [PDF](#)

OPEN ACCESS

012110

Extreme rainfall prediction using spatial extreme value by Max Stable Process (MSP) Smith model approach
H Yasin, A R Hakim, B Warsito and R Santoso

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012111

Modeling the survivorship and the hazard functions of lognormal distribution used to predict risk factors for stroke

Sudarno and A Prahutama

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012112

Budgeting school operational assistance in Central Java using three spatial process modelling

R Wasono, A Karim, M Y Darsyah and Suwardi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012113

Spatial modelling for rice production analysis in Central Java province Indonesia

A Karim, D S Sarra, R Wasono, T W Utami and Toheri

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012114

Smooth Support Vector Machine (SSVM) for classification of Human Development Index

M Y Darsyah, I J Suprayitno, F Fuzi, Bambang W Otok and B S S Ulama

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012115

Implementation of negation handling techniques using modified syntactic rule in Indonesian sentiment analysis

T G Prahasiwi and R Kusumaningrum

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012116

The shortest path search application based on the city transport route in Semarang using the Floyd-warshall algorithm

A Khamami and R Saputra

[View abstract](#) [View](#) [PDF](#)

OPEN ACCESS

012117

Application of decision support system using the K-Nearest Neighbor and Weighted Product method for determining the recipients of low-income family scholarship (*GAKIN*) (case study: Poltekkes Kemenkes Semarang)

L A Nasher and N Bahtiar

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012118

Clustering student behavior based on quiz activities on moodle LMS to discover the relation with a final exam score

I Waspada, N Bahtiar and A Wibowo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012119

Mobile-based sensor notification application

H A Warandi and P W Wirawan

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012120

The early detection system of pulmonary tuberculosis disease using learning vector quantization 2 (lvq2)

L A Widyasari, P S Sasongko, Sutikno, Suhartono and E Reynaldhi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012121

Using C4.5 algorithm to predict students monthly payment on islamic boarding school

S R Istiana and I Waspada

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012122

Performance comparison of machine learning methods for prediction of estimating water production

A P Widowo, E A Sarwoko and Suhartono

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012123

Classification and identification the most important features of cervical cancer based on the expression of microRNA gene with the random forest (RF) algorithm

E A Aziz, A Wibowo and P W Wirawan

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012124

Optimization of neural network for cancer microRNA biomarkers classification

A Wibowo, P W Wiryawan and N I Nuqoyati

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012125

Sentiment analysis of hoax news toward the election 2019 based on student perspective

D G F A Sumardi, Y Nurmalasari, B D Kurnianto and A Kesumawati

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012126

Static and dynamic alliance: the solution of reliable internet bandwidth management

G Aryotejo and M Mufadhol

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012127

The effect of coconut water and tofu wastewater as nitrogen source on the production of alkali protease from *Aspergillus flavus* DUCC K225

I Rukmi, S Pujiyanto, N S Mulyani, N Faidah and L Ayu

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012128

The content of heavy metal lead (Pb) on baung fish (*Hemibagrus nemurus*) as biomonitoring pollution of Wulan River of Demak Regency

E R Sulistya Dewi, K Ni'mah and F Kaswinarni

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012129

Low phosphate latosol soil utilization for cotton plants cultivation by modifying soil structure and vam fertilizer application

A Suprihadi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012130

Bioindicator for environmental water quality based on saprobic and diversity indices of planktonic microalgae: a study case at Rawapening lake, Semarang district, Central Java, Indonesia

R Hariyati and S P Putro

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012131

The comparison of distribution patterns of macrobenthic assemblages adjacent floating net cage areas at Karang Lebar Island, Jakarta: a multivariate approach

Widodo, S P Putro and F Muhammad

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012132

Antimicrobial activity of the combination of red galangal (*Alpinia purpurata* K. Schum) and cinnamon (*Cinnamomum burmanii*) essential oils on *Escherichia coli* and *Staphylococcus aureus* bacteria

T Rialita, H Radiani and D Alfiah

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012134

Simulation of Rainfall-runoff process using HEC-HMS model for Garang Watershed, Semarang, Indonesia

A Sarminingsih, A Rezagama and Ridwan

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012135

In vitro antifungal activity of ethanolic and ethyl acetate extract of mint leaves (*Mentha piperita* L.) against *Candida albicans*

E N Lestyningrum, I Rukmi and S Pujiyanto

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012136

In vitro Antifungal Activity of Methanolic and Chloroform Mint Leaves (*Mentha piperita* L.) Extracts Against *Candida albicans*

K Y Wenji, I Rukmi and A Supriyadi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012137

The swiss webster mice testes structure after exposed to ethanolic neem (*Azadirachta indica*) leaf extract

A J Sitasiwi, S Isdadiyanto and S M Mardiaty

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012138

Analysis of glycemic index of "Gula Semut" through blood glucose level test

S Winarni, F Arifan, RTD. W Broto, A Fuadi and R Ramadhan

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012139

Ecotourism development strategy at minapolitan area of Menayu Village, Magelang District, Central Java, Indonesia

S P Putro, A Wulandari and F Muhammad

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012140

Abundance and diversity of insects on apple water tree during fruit season using different colours and different height placement of sticky trap

U Tarwotjo, R Rahadian and M Hadi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012141

Morphologic characteristics and population density of *Teredo Navalis L* in mangrove forest area, Wailukum East Halmahera Regency

Y. Sinyo, S. Anggoro and T. R. Soeprabawati

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012142

Identification of exudates from callus of Mangrove Plant (*Rhizophora apiculata* BI) *in vitro*.

Y Nurchayati, E Prihastanti and R Budihastuti

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012143

Applications of mycorrhiza on potato growth and productivity

Purwantisari Susiana, Isworo Rukmi and Siti Nur Jannah

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012144

The growth and the production of potato plant supplemented by plant growth promoting rhizobacteria (PGPR)

S Purwantisari, S Parman, Karnoto and K Budihardjo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012145

The Effect of Compost Application in the Silvofishery Pond with Different Mangrove Species on the Phytoplankton Community

E D Hastuti, R B Hastuti and R Hariyati

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012146

Identification of *Harmfull algae blooms* (HABs) species from Demak marine waters

M Zainuri, H P Kusumaningrum, D Nugroho Sugianto, H Endrawati and I Mishbach

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012147

Screening of potential isolate candidates probiotic against *Aeromonas hydrophila* from Boyolali, Indonesia

Sarjito, A H C Haditomo, R W Ariyati, A Sabdaningsih, Desrina and S B Prayitno

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012148

The autoalelopathic potential of the Siam weed (*Chromolaena odorata* L.) leaf extract as a natural herbicide

D Ziadaturrif'ah, S Darmanti and R Budihastuti

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012149

Allelochemical effects of *Chromolaena odorata* L. against photosynthetic pigments and stomata of *Ageratum conyzoides* L. leaves

E D Yuliyani, S Darmanti and E D Hastuti

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012150

Distribution of total suspended solids (TSS) and chlorophyll-a in Kendari Bay, Southeast Sulawesi

M A P Fanela, N D Takarina and Supriatna

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012151

In vitro, antioxidant activity and cream formulation of alkaloid extracts *Perna viridis*

Y D Franyoto, L Kusmita, Mutmainah and Y P Pertiwi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012152

Antioxidant activity, phenol and flavonoid content, and formulation cream of *Stevia rebaudiana Bert*

Mutmainah, L Kusmita, Y Martono, Y D Franyoto, R P Wulandari and T D Kusumaningrum

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012153

Effect supplementation of turmeric powder (*Curcuma longa L.*) on histomorphometric duodenal female *Melopsittacus undulates*

I Baehaqi, T R Saraswati and E Y W Yuniwarti

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012154

Liver histological structure of rats (*Rattus norvegicus*) in the lactation period after supplemented with organic quail eggs

S Prawitasari, T R Saraswati and S Tana

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012155

The comparison of chlorophyll a, b, and the total of maize (*Zea mays saccharata* sturt l) var p-21 by applying fertilizers of nanosilica-npk and nanosilica-manure

E Prihastanti, A. Subagio and Ngadiwiyanana

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012156

The Effect of plasma radiation with leaf fertilizer combination on vegetative growth of orchid planlets *Dendrobium* sp. at the acclimatization stage

M K Nisa, E Prihastanti and S Haryanti

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012157

Effect of the combination of tofu liquid waste and plant media of sago waste on the growth of cayenne (*Capsicum frutescens L.*)

S N Amalia, E Prihastanti and E D Hastuti

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012158

Effect of time fermentation kombucha tea on lipid profile of rats (*Rattus norvegicus L.*)

S Isdadiyanto and S Tana

[View abstract](#) [View article](#) [PDF](#)**OPEN ACCESS**

012159

Analysis of land use changes effect on erosion and sedimentation potential in Progo watershed

A Rezagama, A Sarminingsih, B Zaman and D S Handayani

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012160

Work environment and musculoskeletal complaints of grinding workers of brass crafts

Y Dharmawan, Y Setyaningsih and A Prasetyaningrum

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012161

Characterization phosphate-solubilizing marine actinobacteria associated with *Sargassum Sp* from Menjangan kecil island, Indonesia

A T Lunggani and A. Suprihadi

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012162

Response of blood glucose level in hyperglycemic *Rattus norvegicus* towards giving of mixture of VCO and Olive oil with Vitamine E and their effects on the liver

E Y W Yuniwati, T R Saraswati and E Kusdiyantini

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012163

Application of cinnamon and gotu kola supplements for increasing quail hematological status (*Coturnixcoturnix-australica*)

S M Mas'adah, Sunarno and M A Djaelani

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012164

The species diversity of avifauna in Bukit Cinta Klaten in supporting the development of birdwatching area of Gunung Gajah Village Klaten

Sunarno, R Rahadian, H Wiradarma, A Kurniawan and I M Tamar

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012165

Potency of mangosteen (*Garcinia mangostana* L.) pericarp on seminiferous tubules testes streptozotocin-induced diabetic rats

C N Primiani and U Lestari

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012166

Effect of combination explant difference leaf part and concentration of active charcoal on callus initiation mangrove (*Rhizophora Apiculata* BI) by *in-vitro*

D Fitriana, E Prihastanti, Y Nurchayati and R B Hastuti

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012167

A Study of mono multifilament bottom gill net in Rembang waters

ADP Fitri, H Boesono, B B Jayanto, K E Prihantoko and T H Hapsari

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012168

The Structure of Plankton as An Environmental Indicator for Water Management in Upper Part of Rawapening Lake, Semarang Regency, Indonesia

J W Hidayat, R B Hastuti, M Hadi and G Yulianto

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012169

Cadmium (Cd) content in mangrove oyster (*Crassostrea sp.*) in tapak coastal water semarang, Indonesia

J A Saputro, J W Hidayat and R Hariyati

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012170

Impact of a El-Nino Southern Oscillation (ENSO) to Fluctuation of Skipjack Catch Production in Southern East Java

C Handayani, A H Soepardjo and E Aldrian

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012171

Inventory and biodiversity medicinal plants of dayak tomun society in lopus village Lamandau regency central Kalimantan

E A Santoso, Jumari and S Utami

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012172

Alternatif Main Food from *Dioscorea alata*: Its Potency from Central Java, Indonesia

Jumari, T R Soeprbowati and A R Nafisa

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012173

Grouper-based *coastal eco-marine-tourism* in Gerokgak district, Bali

C Kardi and I W Wiasta

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012174

Analysis of Pb residues on seaweed *gracillaria* spp in Randusangan District, Brebes, Central Java, Indonesia

B D Madusari, J W Hidayat and M N Permatasari

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012175

Diversity and abundance of medicinal plants in Penggaron tourism forest of Central Java, Indonesia

S Utami and R Rahadian

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012176

Ecological characteristics of nocturnal pest insects and their natural enemies in green bean fields

M Hadi, D A Martitik and U Tarwotjo

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012177

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

A Haris, S Utami and Murningsih

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012178

The effect of straw substrate variation in production of cellulase enzyme by *Serratia marcescens*

Wijanarka, K L Budi and E Kusdiyantini

[View abstract](#) [View article](#) [PDF](#)

OPEN ACCESS

012179


The use of Macroalga *Sargassum* sp. and *Gracilaria verrucosa* in improving Sandy and Clay Soil fertility

M Izzati, S Haryanti and N Setiari

[View abstract](#) [View article](#) [PDF](#)

-
- OPEN ACCESS** 012180
- The potential of soil arthropods as bioindicator of soil quality in relation to environmental factors at apple farm, Batu, East Java, Indonesia
- D Suheriyanto, Z Zuhro, I E Farah and A Maulidiyah
- [View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012181
- Vegetation analysis the waterfalls Curug Sewu in village Curug Sewu subdistrict Patean Kendal regency
- Sunarmi, J W Hidayat and F Muhammad
- [View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012182
- The diversity of plankton in fish aquaculture water of minapolitan Menayu village, Muntilan district, Magelang regency
- A Wulandari, S P Putro and F Muhammad
- [View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012183
- Isolation and identification of carotenoid-producing microalgae from Demak marine waters
- H P Kusumaningrum, A Suprihadi, A Budiharjo, M Zainuri, I Misbach and A Maulidiyah
- [View abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012184
- Isolation and screening of lactic acid bacteria from grasshopper gut as novel probiotic candidates to digest cellulose polymer
- R Abdullah, T Erfianti, D A Pratama and Wijanarka

[View abstract](#)

 [View article](#)

 [PDF](#)

JOURNAL LINKS

[Journal home](#)

[Information for organizers](#) [Information for](#)

[authors](#)

[Search for published proceedings](#) [Contact us](#)

[Reprint services from Curran Associates](#)

PAPER • OPEN ACCESS

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

To cite this article: A Haris *et al* 2019 *J. Phys.: Conf. Ser.* **1217** 012177

View the [article online](#) for updates and enhancements.



IOP | ebooks™

Bringing you innovative digital publishing with leading voices to create your essential collection of books in STEM research.

Start exploring the collection - download the first chapter of every title for free.

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

A Haris¹, S Utami¹ and Murningsih¹

¹Biologi Department, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof. Sudharto, SH., Tembalang, Semarang, Central Java, Indonesia, 50275
E-mail: amnan.haris43@gmail.com

Abstract. Rice weeds are disturbing plants that grow together with rice and otherwise well-controlled, it will reduce the quantity and quality of crops. The aim of this research is to analyze the community structure of weed rice in 8-week-old. Benefits of this research are expected to provide information about the types of rice weeds and their characteristics. Research was conducted in June 2018 in Bulusari Village, Sayung District, Demak Regency; and Ecology and Biosystematics Laboratory, Biology Departement, Diponegoro University. Method of this research is a random sampling method used a plot sized 1 m x 1 m as many as 18 plots. Results of the research were the highest Important Value Index is *Echinochloa colonum* (L) Link species and rice weed diversity index is low.

1. Introduction

Rice (*O. sativa* L.) is the main food crop in Asia, especially Indonesia, because the majority of its population consume rice as a staple food. Rice production must be increased to meet food demand due to population growth. One of the important things to increase rice production is minimizing crop losses caused by weeds. Yield loss caused by weeds were exceeds than yield loss caused by plant pests and diseases. In addition, competition with weeds also decreases the quality of rice grains [1].

Rice weeds are disturbing plants that grow with rice and otherwise well-controlled, it will reduce the quantity and quality of crops [2]. Rice weeds are associated and will fight each other for the nutrients needed by rice, especially if the amount of nutrients is very limited. Potential competition for rice weeds are increasingly supported by breeding both vegetatively and generatively [3].

According to research conducted by Fitri *et al* [4] in Nagari Singkarak, Solok Regency, West Sumatra, there were 10 types of rice weeds : *Eclipta prostrata* (L.), *Lindernia ciliata* (Colsm.) Pennell, *Ludwigia hyssopifolia* (G. Don) Exell, *Hedyotis diffusa* Willd, *Echinochloa colonum* (L.) Link, *Echinochloa crus-galli* (L.) Beauv, *Leptochloa chinensis* (L.) Nees, *Cyperus difformis* L., *Cyperus iria* L., *Fimbristylis miliacea* (L.) Vahl. The highest Important Value Index was (IVI) owned by *Fimbristylis miliacea* (L.) Vahl which was 108.50% and the lowest was *Hedyotis diffusa* Willd of 1.61%. This shows that *Fimbristylis miliacea* (L.) Vahl have an important role in maintaining the balance of weed communities in these fields. The diversity index is 1.6 which means the diversity of weeds in the rice field is moderate. Rice weeds always in the fields, one of which is the rice fields in Demak.



Demak is the third largest rice production center in Central Java with a production of 632.751 ton in 2015. The wide of rice field area is 94,877 hectares in 14 existing districts [5]. But rice cultivation activities in Demak still rely on rainwater. So, the farmer will only plant rice when the rainy season arrives [6].

The aims of this research is to determine the structure of rice weed communities in Bulusari Village, Sayung District, Demak Regency by calculating the Important Value Index (IVI) and Shannon-Wiener Diversity Index (H'). The expected benefits from this research are it can be used by farmers as a guide in weed management to increase rice productivity.

2. Material and Methods

Time and Place of Research

Reserach was conducted in June 2018 on 700 m² of inorganic rice field in Bulusari Village, Sayung District, Demak Regency. Identification of the rice weeds at the Ecology and Biosystematics Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University.

Tools and materials

Tools used were camera, meters, ropes, pegs, scissors, plastic bags, stationery and rice weed identification book "Weed of Rice in Indonesia" (1987) by Mohamad Soerjani, Achmad Jahja G.H. Kostermans, Gembong Tjitrosoepomo. The materials used are labels, envelopes and rice weed samples.

Method

Rice weed sampling used a random method. Rice weeds were allowed to grow with rice plants until the age of 8 weeks. Size plot used for the research is 1 mx 1 m, 18 plots. Recorded on the types of rice weeds that grow and counted the number of individuals of each type of rice weed. The types of rice weeds were brought to the Ecology and Biosystematics laboratory to be identified. Identification of rice weed samples using the "Weed of Rice in Indonesia" book by Soerjani *et al.* [7].

Environmental factors were measured including light intensity with lux meter, pH and soil moisture with soil tester, air temperature with thermometer, humidity with hygrometer and altitude with altimeter.

Data analysis

The data obtained were analyzed by calculating type dominance, Important Value Index (IVI) and Shannon-Wiener Diversity Index

Dominance of Plant Types

$$= \frac{\text{Number of individuals in a family}}{\text{Number of individuals in all families}} \times 100\%$$

Dominant families if they have a percentage of > 20% total individuals, codominant 10% - 20%, and not dominant <10% [8].

Important Value Index

Species density [9],

Absolute density (AD)

$$= \frac{\text{Number of Individuals of a Type}}{\text{Area of observation plot}}$$

Relative Density (RD)

$$= \frac{\text{Absolute density of a type}}{\sum \text{Total absolute density of all types}} \times 100\%$$

Frequency [10],

$$\text{Absolute Frequency (AF)} = \frac{\text{The number of plots occupied by a type}}{\text{The total number of observation plots}}$$

$$\text{Relative Frequency (RF)} = \frac{\text{Absolute frequency of a Type}}{\text{Absolute Frequency of All Types}} \times 100\%$$

$$\text{IVI} = \text{RD} + \text{RF}$$

Information :

IVI = Important Value Index

RD = Relative Density

RF = Relative Frequency

Shannon-Wiener Diversity Index [12]:

$$H' = - \sum (n_i / N) \ln (n_i / N)$$

Information :

H' = Shannon-Wiener diversity index

n_i = Number of i-type individuals

N = Total number of individuals of all types

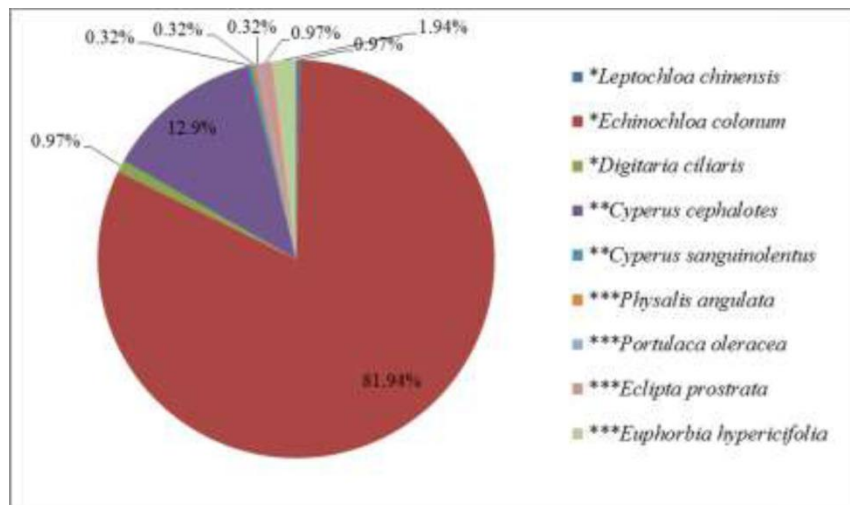
The level of species diversity uses the Fachrul criteria [13] :

- a. $H' \text{ value} > 3$: species diversity is high.
- b. $1 \leq H' \leq 3$ value: species diversity is moderate.
- c. $H' < 1$ value : species diversity is low or small.

3. Results and discussion

Weed Composition

The results showed that at 8 weeks of age, Rice weeds were consisting of 6 families, 10 species, and 310 individuals. There are 5 types of grasses with 258 individuals, there are 2 types of sedges with 41 individuals, and 4 broad-leaves groups with 11 individuals.



Remarks: * Grasses, ** Sedges, *** Broad-leaves

Figure 1. Percentage of Rice Weed Types in Bulusari Village, Sayung Districts, Demak Regency

In Figure 1, The dominant plant types of the rice weed were *Echinochloa colonum* (L) Link. It caused by its ability to produce large amounts of seedlings and seeds. Tanasale [14] stated that weeds which can survive were weeds that can reproduce vegetatively and generatively whereas the non-dominant families were Portulacaceae and Solanaceae. It because Portulacaceae and Solanaceae need wider growth space, of course, it will be difficult because there is not available enough space. Sravani [15] describes *Portulaca oleracea* L. including broadleaf weeds which have many branches with a height of up to 1 m. The dominating nature of a particular species can cause adverse effects on the ecosystem occupied by the species. Dominance is closely related to invasion. Tjitrosoedirdjo [16], states invasion is a trait that describes the performance of a plant species that becomes dominant and threatens ecosystems, habitats and other species found in a location.

Important Value Index (IVI)

Based on Table 1, species with the highest Important Value Index (IVI) was *Echinochloa colonum* (L) Link and the lowest were *Leptochloa chinensis* (L.) Nees, *Cyperus sanguinolentus* Vahl, *Portulaca oleracea* L and *Physalis angulata* L. *Echinochloa colonum* (L) Link has the highest Important Value Index (IVI) because it has the most number and it found in almost all plots. It shows the important effect of the *Echinochloa colonum* (L) Link on these fields [17]. whereas *Leptochloa chinensis* (L.) Nees, *Cyperus sanguinolentus* Vahl, *Portulaca oleracea* L., and *Physalis angulata* L. have the lowest Important Value Index (IVI) because they least found among other types of weeds. Solfiyeni [18] stated that the low relative density value of a species indicates that the species has fewer individuals than other weed types, while the relatively low-frequency value of a species is an indication that this type have a narrow distribution.

Table 1. Structure of Rice Weed in Bulusari Village, Sayung Districts, Demak Regency

No.	Type	Famili	Nama spesies	IVI (%)
1	Grasses	Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koel	12.08
2			<i>Echinochloa colonum</i> (L) Link	105.16
3			<i>Leptochloa chinensis</i> (L.) Nees	5.88
5	Sedge	Cyperaceae	<i>Cyperus sanguinolentus</i> Vahl	5.88

6	weed		<i>Cyperus cephalotes</i> Vahl	29.57
7	Broad-	Asteraceae	<i>Eclipta prostrata</i> (L.) L	12.08
8	leaved	Portulacaceae	<i>Portulaca oleracea</i> L.	5.88
9		Solanaceae	<i>Physalis angulata</i> L.	5.88
10		Euphorbiaceae	<i>Euphorbia hypericifolia</i> L.	18.60
Total Number of Individuals of all Types				310
Total number of all types (S)				10
Species Diversity Index (H')				0.69

Species Diversity Index

Weed species diversity index in 8 weeks old rice was 0.69. This value shows that weed species diversity in 8 weeks old rice was low. This value indicates that the rice field ecosystem has low weed diversity. This condition indicates that the ecosystem is less balanced. Suryatini [19] stated that the value of H' would increase if the number of species in the community increased and the distribution was even. Species diversity has a close relationship with environmental conditions

Environmental factor

Based on the measurement of environmental factors conducted at the research location, the results can be seen in table 2 below

Table 2. Measurement of Environmental Factors on Rice Field in Bulusari Village, Sayung Districts, Demak Regency

No.	Environmental Factors	Average
1.	Light intensity	11,562 lux
2.	Air temperature	27 °f
3.	Humidity	86 %
4.	Soil pH	7.2
5.	Altitude	9 m fsl

Environmental factors are the factor which has influenced the diversity of the rice weeds from the outside. Based on Table 2, the light intensity at the research site was 11,562 lux. Utami [20] stated that high light intensity has an impact on growth and yield of good rice plants. Air temperature at the research site is 27°C. According to Balitan [21], the optimum temperature for rice plants to grow is 24-28 °C. Air humidity at the research site was 86%. Uluputty [22], stating that high air humidity is needed by weeds to germinate the soil pH at the location of this research is 7.2. Suryatini [19], stated that the soil pH that is best for growth and availability of nutrients is close to neutral (6.5-7.5). Soil pH determines whether or not nutrients can be absorbed easily by plants. The height of the research area is 9 meters above sea level. Suryatini [19], stated that the height of the place is not a limiting factor for the spread of weeds, because weeds can grow well to a height above 500 m above sea level.

4. Conclusion

From this present research, we conclude that *Echinochloa colonum* (L) Link was commonly found on the rice field in Bulusari Village, Sayung Districts, Demak Regency. It needs advance research to know

fluctuating community structure of the rice weeds in Field in Bulusari Village, Sayung Districts, Demak Regency

References

- [1] Antralina M, Istina I N, Yuwariah Y, Simarmata T 2015 *Procedia Food Science* **3** 323.
- [2] Sarifin M, Sujana I P, Pura N L S 2017 *Agrimeta* **7** 50-55.
- [3] Utami S dan Pudyaningrum, L R 2012 *J Bioma* **2** 91.
- [4] Fitri D S, Syam Z dan Solfiyeni 2014 *J Biologi Universitas Andalas* **3** 68.
- [5] Badan Pusat Statistik Provinsi Jawa Tengah. 2015 *Luas Panen, Produksi dan Produktivitas padi Sawah dan Padi Ladang Menurut Kabupaten dan Kota di Provinsi Jawa Tengah tahun 2015*.
- [6] Martitik D A 2018 *Keragaman Serangga OPT dan Musuh Alami di Lahan Kacang Hijau Sebelum dan Pasca Panen* Skripsi Departemen Biologi Undip
- [7] Soerjani M, Jahja A, Kostermans G H, Tjitrosoepomo G 1987 *Weed of Rice in Indonesia*.
- [8] Johnston and Gillman 1995 *Biodiversity and Conversation* **4** 339.
- [9] Irwanto 2007 *Analisis Vegetasi untuk Pengelolaan Kawasan Hutan Lindung Pulau Marsegu, Kabupaten Seram Barat, Provinsi Maluku* Sekolah Pasca Sarjana, Universitas Gadjah Mada, Yogyakarta.
- [10] Indriyanto 2006 *Ekologi Hutan* Jakarta: Bumi Aksara.
- [11] Brower J E, Zar J H 1997 *Field and Laboratory Methods for General Ecology* Iowa: Brown
- [12] Krebs C J 1989 *Ecological Methodology* Harper and Row Publisher New York
- [13] Fachrul M F 2007 *Metode Sampling Bioteknologi* Jakarta: Bumi Aksara.
- [14] Tanasale V L 2012 *Budidaya Pertanian* **8** 7.
- [15] Sravani V L, Abbas Z, Surya P 2017 *IAJPS* **4** 2845
- [16] Tjitrosoedirdjo S 2015 *Tumbuhan Invasif Pelaihan ke III Pengelolaan Gulma dan Tumbuhan Bogor: Invasif Seameo Biotrop*.
- [17] Amarullah E T, Trizelia, Yaherwandi, Hamid H 2017 *Biodiversitas* **18** 1218.
- [18] Solfiyeni, Chairul, Marpaung M 2016 *Proceeding Biology Education Conference* vol 13 p 743.
- [19] Suryatini Luh 2018 *J Sains dan Teknologi* **7** 77.
- [20] Utami D N 2017 *Pengaruh Intensitas Cahaya Terhadap Pertumbuhan dan Hasil Beberapa Varietas padi (Oryza sativa L.)* Electronic Thesis and Dissertation Unsyah Aceh.
- [21] Balitan 2008 *Teknologi Budidaya Padi* Balai Besar Pengkajian dan Pengembangan Teknologi Pertanian Solok.
- [22] Uluputty M R 2014 *J Agrologia* **3** 37

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

by Amnan Haris

Submission date: 20-Aug-2019 08:19AM (UTC+0700)

Submission ID: 1161578282

File name: Haris_2019_J._Phys._Conf._Ser._1217_012177.pdf (497.24K)

Word count: 2409

Character count: 12635

PAPER • OPEN ACCESS

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

1

To cite this article: A Haris *et al* 2019 *J. Phys.: Conf. Ser.* 1217 012177

View the [article online](#) for updates and enhancements.



IOP | ebooks™

Bringing you innovative digital publishing with leading voices to create your essential collection of books in STEM research.

Start exploring the collection - download the first chapter of every title for free.

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

A Haris¹, S Utami¹ and Murningsih¹

¹Biologi Department, Faculty of Science and Mathematics, Diponegoro University
Jl. Prof. Sudharto, SH., Tembalang, Semarang, Central Java, Indonesia, 50275
E-mail: amnan.haris43@gmail.com

Abstract. Rice weeds are disturbing plants that grow together with rice and otherwise well-controlled, it will reduce the quantity and quality of crops. The aim of this research is to analyze the community structure of weed rice in 8-week-old. Benefits of this research are expected to provide information about the types of rice weeds and their characteristics. Research was conducted in June 2018 in Bulusari Village, Sayung District, Demak Regency; and Ecology and Biosystematics Laboratory, Biology Departement, Diponegoro University. Method of this research is a random sampling method used a plot sized 1 m x 1 m as many as 18 plots. Results of the research were the highest Important Value Index is *Echinochloa colonum* (L.) Link species and rice weed diversity index is low.

1. Introduction

Rice (*O. sativa* L.) is the main food crop in Asia, especially Indonesia, because the majority of its population consume rice as a staple food. Rice production must be increased to meet food demand due to population growth. One of the important things to increase rice production is minimizing crop losses caused by weeds. Yield loss caused by weeds were exceeds than yield loss caused by plant pests and diseases. In addition, competition with weeds also decreases the quality of rice grains [1].

Rice weeds are disturbing plants that grow with rice and otherwise well-controlled, it will reduce the quantity and quality of crops [2]. Rice weeds are associated and will fight each other for the nutrients needed by rice, especially if the amount of nutrients is very limited. Potential competition for rice weeds are increasingly supported by breeding both vegetatively and generatively [3].

According to research conducted by Fitri *et al* [4] in Nagari Singkarak, Solok Regency, West Sumatra, there were 10 types of rice weeds : *Eclipta prostrata* (L.), *Lindernia ciliata* (Colsm.) Pennell, *Ludwigia hyssopifolia* (G. Don) Exell, *Hedyotis diffusa* Willd, *Echinochloa colonum* (L.) Link, *Echinochloa crus-galli* (L.) Beauv, *Leptochloa chinensis* (L.) Nees, *Cyperus difformis* L., *Cyperus iria* L., *Fimbristylis miliacea* (L.) Vahl. The highest Important Value Index was (IVI) owned by *Fimbristylis miliacea* (L.) Vahl which was 108.50% and the lowest was *Hedyotis diffusa* Willd of 1.61%. This shows that *Fimbristylis miliacea* (L.) Vahl have an important role in maintaining the balance of weed communities in these fields. The diversity index is 1.6 which means the diversity of weeds in the rice field is moderate. Rice weeds always in the fields, one of which is the rice fields in Demak.



Demak is the third largest rice production center in Central Java with a production of 632.751 ton in 2015. The wide of rice field area is 94,877 hectares in 14 existing districts [5]. But rice cultivation activities in Demak still rely on rainwater. So, the farmer will only plant rice when the rainy season arrives [6].

The aims of this research is to determine the structure of rice weed communities in Bulusari Village, Sayung District, Demak Regency by calculating the Important Value Index (IVI) and Shannon-Wiener Diversity Index (H'). The expected benefits from this research are it can be used by farmers as a guide in weed management to increase rice productivity.

2. Material and Methods

2.1 Time and Place of Research

Reserach was conducted in June 2018 on 700 m² of inorganic rice field in Bulusari Village, Sayung District, Demak Regency. Identification of the rice weeds at the Ecology and Biosystematics Laboratory, Department of Biology, Faculty of Science and Mathematics, Diponegoro University.

2.2 Tools and materials

Tools used were camera, meters, ropes, pegs, scissors, plastic bags, stationery and rice weed identification book "Weed of Rice in Indonesia" (1987) by Mohamad Soerjani, Achmad Jahja G.H. Kostermans, Gembong Tjitrosoepomo. The materials used are labels, envelopes and rice weed samples.

2.3 Method

Rice weed sampling used a random method. Rice weeds were allowed to grow with rice plants until the age of 8 weeks. Size plot used for the research is 1 mx 1 m, 18 plots. Recorded on the types of rice weeds that grow and counted the number of individuals of each type of rice weed. The types of rice weeds were brought to the Ecology and Biosystematics laboratory to be identified. Identification of rice weed samples using the "Weed of Rice in Indonesia" book by Soerjani *et al.* [7].

Environmental factors were measured including light intensity with lux meter, pH and soil moisture with soil tester, air temperature with thermometer, humidity with hygrometer and altitude with altimeter.

2.4 Data analysis

The data obtained were analyzed by calculating type dominance, Important Value Index (IVI) and Shannon-Wiener Diversity Index

$$\begin{aligned} & \text{Dominance of Plant Types} \\ & = \frac{\text{Number of individuals in a family}}{\text{Number of individuals in all families}} \times 100\% \end{aligned}$$

Dominant families if they have a percentage of > 20% total individuals, codominant 10% - 20%, and not dominant <10% [8].

Important Value Index

Species density [9],

$$\begin{aligned} & \text{Absolute density (AD)} \\ & = \frac{\text{Number of Individuals of a Type}}{\text{Area of observation plot}} \end{aligned}$$

Relative Density (RD)

$$= \frac{\text{Absolute density of a type}}{\sum \text{Total absolute density of all types}} \times 100\%$$

Frequency [10],

$$\text{Absolute Frequency (AF)} = \frac{\text{The number of plots occupied by a type}}{\text{The total number of observation plots}}$$

$$\text{Relative Frequency (RF)} = \frac{\text{Absolute frequency of a Type}}{\text{Absolute Frequency of All Types}} \times 100\%$$

$$\text{IVI} = \text{RD} + \text{RF}$$

Information :

IVI = Important Value Index

RD = Relative Density

RF = Relative Frequency

Shannon-Wiener Diversity Index [12]:

$$H' = - \sum (ni / N) \ln (ni / N)$$

Information :

H' = Shannon-Wiener diversity index

ni = Number of i-type individuals

N = Total number of individuals of all types

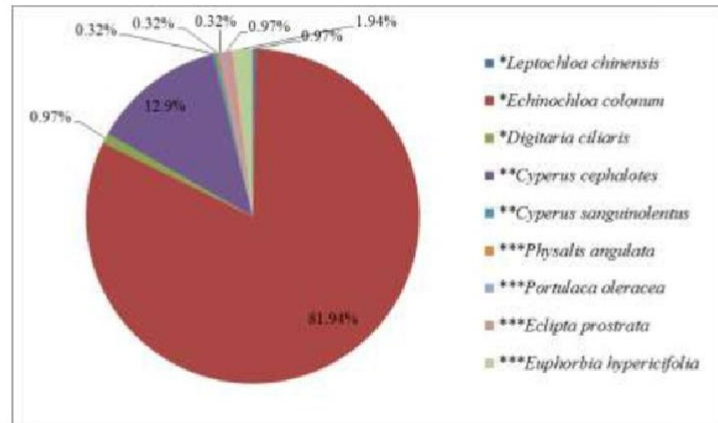
The level of species diversity uses the Fachrul criteria [13] :

- H' value > 3 : species diversity is high.
- $1 \leq H' \leq 3$ value: species diversity is moderate.
- H' < 1 value : species diversity is low or small.

3. Results and discussion

3.1 Weed Composition

The results showed that at 8 weeks of age, Rice weeds were consisting of 6 families, 10 species, and 310 individuals. There are 5 types of grasses with 258 individuals, there are 2 types of sedges with 41 individuals, and 4 broad-leaves groups with 11 individuals.



Remarks: * Grasses, ** Sedges, *** Broad-leaves

Figure 1. Percentage of Rice Weed Types in Bulusari Village, Sayung Districts, Demak Regency

In Figure 1, The dominant plant types of the rice weed were *Echinochloa colonum* (L) Link. It caused by its ability to produce large amounts of seedlings and seeds. Tanasale [14] stated that weeds which can survive were weeds that can reproduce vegetatively and generatively whereas the non-dominant families were Portulacaceae and Solanaceae. It because Portulacaceae and Solanaceae need wider growth space, of course, it will be difficult because there is not available enough space. Sravani [15] describes *Portulaca oleracea* L. including broadleaf weeds which have many branches with a height of up to 1 m. The dominating nature of a particular species can cause adverse effects on the ecosystem occupied by the species. Dominance is closely related to invasion. Tjitrosoedirdjo [16], states invasion is a trait that describes the performance of a plant species that becomes dominant and threatens ecosystems, habitats and other species found in a location.

3.2. Important Value Index (IVI)

Based on Table 1, species with the highest Important Value Index (IVI) was *Echinochloa colonum* (L) Link and the lowest were *Leptochloa chinensis* (L.) Nees, *Cyperus sanguinolentus* Vahl, *Portulaca oleracea* L and *Physalis angulata* L. *Echinochloa colonum* (L) Link has the highest Important Value Index (IVI) because it has the most number and it found in almost all plots. It shows the important effect of the *Echinochloa colonum* (L) Link on these fields [17], whereas *Leptochloa chinensis* (L.) Nees, *Cyperus sanguinolentus* Vahl, *Portulaca oleracea* L., and *Physalis angulata* L. have the lowest Important Value Index (IVI) because they least found among other types of weeds. Solfiyeni [18] stated that the low relative density value of a species indicates that the species has fewer individuals than other weed types, while the relatively low-frequency value of a species is an indication that this type have a narrow distribution.

Table 1. Structure of Rice Weed in Bulusari Village, Sayung Districts, Demak Regency

No.	Type	Famili	Nama spesies	IVI (%)
1	Grasses	Poaceae	<i>Digitaria ciliaris</i> (Retz.) Koel	12.08
2			<i>Echinochloa colonum</i> (L) Link	105.16
3			<i>Leptochloa chinensis</i> (L.) Nees	5.88
5	Sedge	Cyperaceae	<i>Cyperus sanguinolentus</i> Vahl	5.88

6	weed		<i>Cyperus cephalotes</i> Vahl	29.57
7	Broad-leaved	Asteraceae	<i>Eclipta prostrata</i> (L.) L	12.08
8		Portulacaceae	<i>Portulaca oleracea</i> L.	5.88
9		Solanaceae	<i>Physalis angulata</i> L.	5.88
10		Euphorbiaceae	<i>Euphorbia hypericifolia</i> L.	18.60
Total Number of Individuals of all Types				310
Total number of all types (S)				10
Species Diversity Index (H')				0.69

3.3 Species Diversity Index

Weed species diversity index in 8 weeks old rice was 0.69. This value shows that weed species diversity in 8 weeks old rice was low. This value indicates that the rice field ecosystem has low weed diversity. This condition indicates that the ecosystem is less balanced. Suryatini [19] stated that the value of H' would increase if the number of species in the community increased and the distribution was even. Species diversity has a close relationship with environmental conditions

3.4 Environmental factor

Based on the measurement of environmental factors conducted at the research location, the results can be seen in table 2 below

Table 2. Measurement of Environmental Factors on Rice Field in Bulusari Village, Sayung Districts, Demak Regency

No.	Environmental Factors	Average
1.	Light intensity	11,562 lux
2.	Air temperature	27 °f
3.	Humidity	86 %
4.	Soil pH	7.2
5.	Altitude	9 m fsl

Environmental factors are the factor which has influenced the diversity of the rice weeds from the outside. Based on Table 2, the light intensity at the research site was 11,562 lux. Utami [20] stated that high light intensity has an impact on growth and yield of good rice plants. Air temperature at the research site is 27°C. According to Balitan [21], the optimum temperature for rice plants to grow is 24-28 °C. Air humidity at the research site was 86%. Uluputty [22], stating that high air humidity is needed by weeds to germinate the soil pH at the location of this research is 7.2. Suryatini [19], stated that the soil pH that is best for growth and availability of nutrients is close to neutral (6.5-7.5). Soil pH determines whether or not nutrients can be absorbed easily by plants. The height of the research area is 9 meters above sea level. Suryatini [19], stated that the height of the place is not a limiting factor for the spread of weeds, because weeds can grow well to a height above 500 m above sea level.

4. Conclusion

From this present research, we conclude that *Echinochloa colonum* (L) Link was commonly found on the rice field in Bulusari Village, Sayung Districts, Demak Regency. It needs advance research to know

fluctuating community structure of the rice weeds in Field in Bulusari Village, Sayung Districts, Demak Regency

References

- [1] Antralina M, Istina I N, Yuwariah Y, Simarmata T 2015 *Procedia Food Science* **3** 323.
- [2] Sarifin M, Sujana I P, Pura N L S 2017 *Agrimeta* **7** 50-55.
- [3] Utami S dan Pudyaningrum, L R 2012 *J Bioma* **2** 91.
- [4] Fitri D S, Syam Z dan Solfiyeni 2014 *J Biologi Universitas Andalas* **3** 68.
- [5] Badan Pusat Statistik Provinsi Jawa Tengah. 2015 *Luas Panen, Produksi dan Produktivitas padi Sawah dan Padi Ladang Menurut Kabupaten dan Kota di Provinsi Jawa Tengah* tahun 2015.
- [6] Martitik D A 2018 *Keragaman Serangga OPT dan Musuh Alami di Lahan Kacang Hijau Sebelum dan Pasca Panen* Skripsi Departemen Biologi Undip
- [7] Soerjani M, Jahja A, Kostermans G H, Tjitrosoepomo G 1987 *Weed of Rice in Indonesia*.
- [8] Johnston and Gillman 1995 *Biodiversity and Conversation* **4** 339.
- [9] Irwanto 2007 *Analisis Vegetasi untuk Pengelolaan Kawasan Hutan Lindung Pulau Marsegu, Kabupaten Seram Barat, Provinsi Maluku* Sekolah Pasca Sarjana, Universitas Gadjah Mada, Yogyakarta.
- [10] Indriyanto 2006 *Ekologi Hutan* Jakarta: Bumi Aksara.
- [11] Brower J E, Zar J H 1997 *Field and Laboratory Methods for General Ecology* Iowa: Brown
- [12] Krebs C J 1989 *Ecological Methodology* Harper and Row Publisher New York
- [13] Fachrul M F 2007 *Metode Sampling Bioteknologi* Jakarta: Bumi Aksara.
- [14] Tanasale V L 2012 *Budidaya Pertanian* **8** 7.
- [15] Sravani V L, Abbas Z, Surya P 2017 *IAJPS* **4** 2845
- [16] Tjitrosoedirdjo S 2015 *Tumbuhan Invasif Pelatihan ke III Pengelolaan Gulma dan Tumbuhan Bogor: Invasif Seameo Biotrop*.
- [17] Amarullah E T, Trizelia, Yaherwandi, Hamid H 2017 *Biodiversitas* **18** 1218.
- [18] Solfiyeni, Chairul, Marpaung M 2016 *Proceeding Biology Education Conference* vol 13 p 743.
- [19] Suryatini Luh 2018 *J Sains dan Teknologi* **7** 77.
- [20] Utami D N 2017 *Pengaruh Intensitas Cahaya Terhadap Pertumbuhan dan Hasil Beberapa Varietas padi (Oryza sativa L.)* Electronic Thesis and Dissertation Unsyah Aceh.
- [21] Balitan 2008 *Teknologi Budidaya Padi* Balai Besar Pengkajian dan Pengembangan Teknologi Pertanian Solok.
- [22] Uluputty M R 2014 *J Agrologia* **3** 37.

Weeds community structure on the rice field (Oryza sativa L.) in bulusari village, Sayung district, Demak regency

ORIGINALITY REPORT

19%

SIMILARITY INDEX

12%

INTERNET SOURCES

10%

PUBLICATIONS

18%

STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to <u>Universitas Diponegoro</u> Student Paper	8%
2	<u>repository.tudelft.nl</u> Internet Source	2%
3	Submitted to <u>Universiti Sains Malaysia</u> Student Paper	2%
4	Submitted to <u>King Mongkut's Institute of Technology Ladkrabang</u> Student Paper	1%
5	Submitted to <u>Universitas Brawijaya</u> Student Paper	1%
6	<u>ediss.uni-goettingen.de</u> Internet Source	1%
7	<u>Tahir Hussain Awan, Pompe C. Sta Cruz, Bhagirath Singh Chauhan. "Effect of pre-emergence herbicides and timing of soil saturation on the control of six major rice weeds and their phytotoxic effects on rice seedlings",</u>	1%

Crop Protection, 2016

Publication

8	Submitted to University of Seoul Student Paper	1%
9	jurnal.untad.ac.id Internet Source	1%
10	china.iopscience.iop.org Internet Source	1%
11	Submitted to Universiti Putra Malaysia Student Paper	<1%
12	www.spotidoc.com Internet Source	<1%
13	Submitted to Sriwijaya University Student Paper	<1%
14	GUI H. LIU. "Landscape-scale variation in the seed banks of floodplain wetlands with contrasting hydrology in China", <i>Freshwater Biology</i> , 10/2006 Publication	<1%
15	Subudhi, H. N., S. P. Panda, P. K. Behera, and Chitra Patnaik. "A Check List of Weeds in Rice Fields of Coastal Orissa, India". <i>Journal of Agricultural Science</i>, 2015. Publication	<1%
16	Chauhan, Bhagirath S., Sharif Ahmed, and Tahir	

H. Awan. "Performance of sequential herbicides in dry-seeded rice in the Philippines". *Crop Protection*. 2015.

Publication

<1%

Exclude quotes On

Exclude matches - 7 words

Exclude bibliography Co.

Weeds community structure on the rice field (*Oryza sativa* L.) in bulusari village, Sayung district, Demak regency

GRADEMARK REPORT

FINAL GRADE

/500

GENERAL COMMENTS

Instructor

PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7



THE MINISTRY OF RESEARCH, TECHNOLOGY, AND HIGHER EDUCATION
THE REPUBLIC OF INDONESIA

DIPONEGORO UNIVERSITY
FACULTY OF SCIENCE AND MATHEMATICS



DECREE OF DEAN NUMBER : 1778/UN7.5.8/HK/2018

Certificate

THIS IS TO CERTIFY THAT

Sri Utami

as

PRESENTER

In the 8th International Seminar on New Paradigm and Innovation on
Natural Science and Its Application (8th ISNPINSA)

Held on 26 September 2018 at Gets Hotel, Semarang, Indonesia

with paper entitled as follows:

Biodiversity of Medicinal Plants In Mixed Forest Penggaron Tourism In Central Java, Indonesia



DEAN OF FSM UNDIP

Prof. Dr. Widowati, S.Si, M.Si
NIP. 196902141994032002

8th ISNPINSA COMMITTEE
CHAIRMAN

Dr. Eng. Ali Khumaeni, M.E
NIP. 198308072014041001