

Table of contents

Volume 679

2021

◀ Previous issue Next issue ▶

The 1st International Conference on Biotechnology and Food Sciences 11 September 2020, Surabaya, Indonesia

Accepted papers received: 08 February 2021

Published online: 26 February 2021

Open all abstracts

Preface

OPEN ACCESS 011001

The 1st International Conference on Biotechnology and Food Sciences (INCOBIFS)
Surabaya Indonesia, 11 September 2020

+ Open abstract  View article  PDF

OPEN ACCESS 011002

Conference Photographs

+ Open abstract  View article  PDF

OPEN ACCESS 011003

Organizing Committee

+ Open abstract  View article  PDF

OPEN ACCESS 011004

Peer review declaration

+ Open abstract  View article  PDF

Papers

OPEN ACCESS 012001

Converting husbandry waste into liquid organic fertilizer using probiotic consortiums
(*Lactobacillus* sp., *Rhodopseudomonas* sp., *Actinomycetes* sp., *Streptomyces* sp.)

S Amrullah, M. Amin and M Ali

+ Open abstract  View article  PDF

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.

OPEN ACCESS

OPEN ACCESS

A review: bioactive compounds of macroalgae and their application as functional beverages

012002

S G Widyaswari, Metusalach, Kasmiasi and N Amir

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

OPEN ACCESS

012003

Improvement quality of sugar cane bagasse as fish feed ingredient

L H Suryaningrum and R Samsudin

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

OPEN ACCESS

012004

The Growth and Yields of Shallot (*Allium Wakegi* Araki) CV. lembah palu Growing under Hydroponic Substrate Systems

R Yusuf, S A Lasmini, M Sandi, A Rahim and I Wahyudi

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

OPEN ACCESS

012005

Application of glycerol on bioplastic based carrageenan waste cellulose on biodegradability and mechanical properties bioplastic

S N Fauziyah, A S Mubarak and D Y Pujiastuti

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

OPEN ACCESS

012006

Gill and skin pathology of hybrid grouper (*E. fuscoguttatus* x *E. lanceolatus*) infested *Zeylanicobdella arugamensis* worms in different infestations degree

M Nisa, G Mahasri and L Sulmartiwi

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

OPEN ACCESS

012007

Growth performance of tambaqui (*Colossoma macropomum*) supplemented with honey prebiotic in stagnant peat ponds

H Silalahi, R Djauhari and S S Monalisa

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

OPEN ACCESS

012008

The Concentration of polyethylen glycol (PeG) 400 on bioplastic cellulose based carrageenan waste on biodegradability and mechanical properties bioplastic

D S Maulana, A S Mubarak and D Y Pujiastuti

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

OPEN ACCESS

012009

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.



Fish oil extraction as a by-product of Tilapia (*Oreochromis* sp.) fish processing with dry rendering method

S H Suseno, A K Rizkon, A M Jacob, Kamini and D Listiana

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

OPEN ACCESS

012010

Optimization of Extraction Time on The Characteristic of Gelatin from Scales of Red Snapper (*Lutjanus* sp.)

I Safi'i, W Tjahjaningsih and E D Masithah

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

OPEN ACCESS

012011

Screening acetylcholinesterase inhibitors from marine-derived actinomycetes by simple chromatography

M Kamaruddin, I Marzuki, A Burhan and R Ahmad

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

OPEN ACCESS

012012

Assessment of Heavy Metal Lead (Pb) Contents in Canned Crab Products by Atomic Absorption Spectrophotometry (AAS)

M Agustina, Mulyono and W Tjahjaningsih

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

OPEN ACCESS

012013

The concentration of sorbitol on bioplastic cellulose based carrageenan waste on biodegradability and mechanical properties bioplastic

M D Arief, A S Mubarak and D Y Pujiastuti

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

OPEN ACCESS

012014

Identification photoprotective activity of marine seaweed: *Eucheuma* sp

R D Kasitowati, A Wahyudi, R Asmara, D Aliviyanti, F Iranawati, M A P Panjaitan, D C Pratiwi and S Arsad

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

OPEN ACCESS

012015

Analysis of the density and intensity of metallothionein in *Crassostrea cucullata* oyster hulls in the coastal fishing port of Mayangan Probolinggo, East Java using immunohistochemical techniques

W Isoni, N Maulida and M I Mubaroqi

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

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.](#)

012016 

The effect of different bait on the catch of traps in the waters of the tip of Pangkah Gresik Regency, East Java

W Isoni, N Maulida and M Huda

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

OPEN ACCESS

012017

The Identification and Distribution Components of Polycyclic Aromatic Hydrocarbon Contaminants at the Port of Paotere, Makassar, South Sulawesi

I Marzuki, I Pratama, H E Ismail, I. Paserangi, M Kamaruddin, M. Chaerul and R Ahmad

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

OPEN ACCESS

012018

Koi (*Cyprinus carpio*) Hatchery techniques: its performance in BBI Boyolali

M G Laksono, Sugianta and M B Santanumurti

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

OPEN ACCESS

012019

Ectoparasite infestation and survival rate of pacific white shrimp (*Litopenaeus vannamei*) that immunized with crude protein *Zoothamnium penaei* in intensive ponds

G Mahasri, A T Mukti, M Nisa, G C Prakosa and W H Satyantini

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

OPEN ACCESS

012020

Study of crude extract yield and gonad maturity level of sea cucumber *Phylloporus dobsoni* correlation

S Andriyono, E D Masithah and D Winarni

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

OPEN ACCESS

012021

Techniques of additional *Kappaphycus alvarezii* on seaweed face mask production

N R Prima and S Andriyono

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

OPEN ACCESS

012022

Ice cream properties affected by carrageenan from seaweed deference type drying methods

I Irawan and Fitriyana

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

OPEN ACCESS

012023

The effect of washing on the making of surimi and kamaboko tilapia (*Oreochromis sp.*)

E Saputra, W Tjanjungsih and A A Abdillah

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.



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

OPEN ACCESS 012024

The effect of storage on the making of surimi and kamaboko tilapia (*Oreochromis* sp.)

E Saputra, W Tjahjaningsih and A A Abdillah

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

OPEN ACCESS 012025

Molecular identification and prevalence of endoparasite worms in Silver pompano (*Trachinotus blochii*) in floating net cages of Mari-culture Center, Lampung

L N F Haryanto, S Subekti, H B Ardiyanti, M K Amiin, R E K Akbar, I Achmadi and M A Yudarana

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

OPEN ACCESS 012026

Microbiology safety of green mussel, *Perna viridis* after treated with boiling and *sous vide*

A S Samsudin and N U Karim

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

OPEN ACCESS 012027

The utilization of chitosan from Comb-pen shell (*Atrina pectinata*) as an emulsion stabilizer in the production of hand body cream

Y Supratin, L Sulmartiwi and E Saputra

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

OPEN ACCESS 012028

The potential of chitosan from comb-pen (*Atrina pectinata*) shell waste on the characteristics of hand body cream

F Fauzi, L Sulmartiwi and E Saputra

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

OPEN ACCESS 012029

Spawning technique of yellowfin tuna (*Thunnus albacares*) infloating nets cage

B Bramantya, Gunawan and L A Sari

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

OPEN ACCESS 012030


Enlargement technique of humpback grouper (*Cromileptes altivelis*) with floating nets cage

G Y Pamungkas and L A Sari

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

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.



-
- OPEN ACCESS** 012031
Microencapsulated fish oil powder by spray drying using combination of wall materials in Kasetsart University, Bangkok
I Aprilia, D Y Pujiastuti and W Klaypradit
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012032
Effect of deacetylation conditions on physicochemical properties of chitosan derived from shrimp shell and squid pen
A R Basarah, D Y Pujiastuti and Yaowapha Waiprib
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012033
Substitution of patin *Pangasius pangasius* flour in making sticks as an alternative of food high protein and source of calcium for autism patients
V Amelia, S Subekti and L Sulmartiwi
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012034
Antioxidant properties from seaweeds *Kappaphycus alvarezii*, *Euchema spinosum* and *Sargasum* sp. using different solvent
A A Abdillah, M A Alamsjah and N E Nasution Sugijanto
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012035
Effect of kappa-carrageenan on physicochemical properties of mantou (Chinese steamed bread)
M H C Putra and A A Abdillah
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012036
The application of betacyanin microcapsules as natural food colorant on beverage model
S R Nurbaya, W D R Putri, E S Murtini and A Khamidah
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012037
Microbial quality and diversity of *Caesio cunning* and *Scolopsis taenioptera* harvested by using trap and trawl fishing techniques
M Suhaimi and N U Karim
[+](#) [Open abstract](#) [View article](#) [PDF](#)
-
- OPEN ACCESS** 012038
See our Privacy Policy and Cookies policy. 

Characteristics physicochemical of melanin from squid ink (*loligo sp.*) extracted by ethanol

F Abidin, L Sulmartiwi and E Saputra

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

OPEN ACCESS

012039

Analysis of fluctuating asymmetry of black strain tilapia *oreochromis niloticus* and red strain tilapia *Oreochromis niloticus* in Kabat Fish Hatchery Center Banyuwangi, East Java

D Kurniawan and A H Fasya

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

OPEN ACCESS

012040

Utilization of fermented Seligi leaf flour *Phyllanthus buxifolius* toward the specific growth rate, daily growth rate and survival rate of siam catfish (*Pangasius pangasius*)

Y G Budiman, M Lamid, B S Rahardja and M Amin

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

OPEN ACCESS

012041

Improving crude protein and crude fat content of Seligi leaf (*Phyllanthus buxifolius*) flour through probiotic fermentation

A K Nisa, M Lamid, W P Lokapirnasari and M Amin

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

OPEN ACCESS

012042

Addition of turmeric in feed on growth and survival rate of Nilasa red tilapia (*Oreochromis sp.*)

R Cahyani, W H Satyantini, D D Nindarwi and Y Cahyoko

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

OPEN ACCESS

012043

Characterization of semi-refined kappa-carrageenan from *Kappaphycus alvarezii* with different solvents in Tanjung Sumenep

H M Noor, M A Alamsjah and S Andriyono

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

OPEN ACCESS

012044

The substitution effect of bone fish flour milkfish (*Chanos chanos*) physical and chemical characteristics of cookies

I Muzaki, H Suprpto and R Kusdarwati

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

OPEN ACCESS

012045

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.



Identification and the prevalence of fungal gouramy (*Osphronemus gouramy*) in modern market Surabaya

M S Andreas, R Kusdarwati and H Suprpto

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

OPEN ACCESS

012046

Substitution of commercial feed with maggot meal (*Hermetia illucens*) to the growth rate, feed conversion ratio and feed efficiency catfish (*Pangasius pangasius*)

M Ulumiah, M Lamid and K T Pursetyo

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

OPEN ACCESS

012047

Correlation between water quality with prevalence of black tiger shrimp (*Penaeus monodon*) infested by ectoparasite protozoa in traditional ponds of Wonorejo, Surabaya

M A Luthfi, S Subekti and G Mahasri

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

OPEN ACCESS

012048

Study of nitrogen (N) and phosphorus (P) in the land of mangrove sediments in ecotourism area Wonorejo Surabaya and coastal area of Jenu Tuban

N Pradipta, M A Alamsjah and E D Masithah

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

OPEN ACCESS

012049

Corellation of water quality to the prevalence of ectoparasite in milkfish (*Chanos chanos*) in Sedati District, Sidoarjo

H Irawan, Kismiyati and G Mahasri

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

OPEN ACCESS

012050

Effect of soaking time of blood cockle (*Anadara* sp.) shells powder with hydrochloric acid on the characteristics of nano calcium

D S Herlina, L Sulmartiwi and E D Masithah

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

OPEN ACCESS

012051

Addition of crude fish oil (CFO) in feed toward fat and energy retention of mud crab (*Scylla serrata*)

S Hadijah, Agustono and W P Lokapirnasari

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

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](#).

012052

Effectiveness of giving clove oil as an anaesthetic for survival rate and number of leucocytes in cantang grouper (*Epinephelus* sp.) in the closed transportation

S Nurkomaria, H Suprpto and Sudarno

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

OPEN ACCESS

012053

Effect of the addition of crude fish oil (CFO) in feed to the content of EPA and DHA in mud crab (*Scylla serrata*)

T Wijaya, Agustono and M A A Arif

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

OPEN ACCESS

012054

The effectiveness combination of maggot (*Hermetia illucens*) flour with commercial feed on growth rate, feed conversion ratio, and feed efficiency of tilapia (*Oreochromis niloticus*)

V Indriawati, B S Rahardja and Prayogo

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

OPEN ACCESS

012055

Depuration of heavy metals Pb and Cd content in blood cockles (*Anadara antiquata*) with different filters

W Arifin, B S Rahardja and K T Pursetyo

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

OPEN ACCESS

012056

Substitution of commercial feed with fermented banana peel flour (*Musaceaea* sp.) and fish meal to feed consumption level, specific growth rate, feed efficiency, fat retention, and energy retention in siam catfish (*Pangasius hypophthalmus*)

A Aisyah, A S Gustiningrum, Agustono and M A Al-Arif

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

OPEN ACCESS

012057

The effect *Moringa oleifera* leaf extract and *Lactobacillus acidophilus* supplementation on crude protein and crude fat retention in Tambaqui, *Colossoma macropomum*

R A Pitri, E Suyanti, S Septayani, Agustono and W P Lokapirnasari

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

OPEN ACCESS

012058

Molecular identification and prevalence of ectoparasite worms in barramundi (*Lates calcarifer*) in Lampung Waters

I Achmadi, S Subekti, H B Ardiyanti, M K Amiin, L N F Haryanto, R E K Akbar and M A Yudarana

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

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.



OPEN ACCESS

012059

Morphological profile of L2 *Anisakis typica* on Indian Mackerel (*Rastrelliger kanagurta*) from Sedati Fish Auction, Sidoarjo-East Java, Indonesia using Scanning Electron Microscope (SEM)

N Suryani, S Subekti, S Koesdarto and M K Amiin

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

OPEN ACCESS

012060

Occurance of Anisakis of mackarel tuna (*Euthynnus affinis*) from Sendangbiru fishing auction place, East Java, Indonesia

R Bobsaid, P D W Sari and S Subekti

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

OPEN ACCESS

012061

The study of virus collation with the polymerase chain reaction (PCR) method in export fishery commodities

L Kurniawati and K T Pursetyo

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

OPEN ACCESS

012062

Effect of Culture Combination on Growth and Carrageenan Content of *Kappaphycus alvarezii* Green and Red Variety

A A Abdillah and J Triastuti

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

OPEN ACCESS

012063

Nitrate and phosphate dynamics of phytoplankton abundance in Kanceng River, Sepuluh, Bangkalan, East Java, Indonesia

D D Nindarwi, S H Samara and M B Santanumurti

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

OPEN ACCESS

012064

Assessment of Seasonal Waters Quality Based on Abundance, Diversity, and Domination of Phytoplankton in Bajulmati Reservoir

E W Pertiwi, E D Masithah and Suciyo

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

OPEN ACCESS

012065

Effect of sublethal dose organophosphate pesticides on embryogenesis and hatching rate of silver rasbora eggs (*Rasbora argyrotaenia*)

A B Prastika, L Sulmartiwi and L Lutfiyah

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.

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



OPEN ACCESS

012066

The correlation between temperature and intensity of *Zeylanicobdella arugamensis* on cantang grouper (*E. fuscoguttatus* × *E. lanceolatus*) from traditional ponds in the Kampung Kerapu Lamongan East Java Indonesia

D D Afifah, G Mahasri and W H Satyantini

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

OPEN ACCESS

012067

Utilization of *Nitrosomonas* sp and *Nitrobacter* sp probiotic towards total suspended solid and ammonia level in Nile tilapia culturing using aquaponic system

K H Dwiardani, Prayogo and B S Rahardja

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

OPEN ACCESS

012068

The administration of *Caulerpa racemosa* extract on total bacteria and survival rates of white shrimp (*Litopenaeus vannamei*) after infected by *Vibrio parahaemolyticus*

A F Pratiwi, W H Satyantini, G Mahasri, L Sulmartiwi, A T Mukti and Sudarno

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

OPEN ACCESS

012069

Examination of Taura Syndrome Virus (TSV) in white shrimp (*Litopenaeus vannamei*) and tiger prawn (*Penaeus monodon*) with Polymerase Chain Reaction (PCR) method

A N Fadilah and A H Fasya

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

OPEN ACCESS

012070

Potential utilization of kombucha as a feed supplement in diets on growth performance and feed efficiency of catfish (*Clarias* sp.)

H U Ramadhan, Prayogo, H Kenconoajati, B S Rahardja, M H Azhar and D S Budi

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

OPEN ACCESS

012071

Application of edible film from chitosan as biodegradable packaging

E Saputra, W Tjahjaningsih and A A Abdillah

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

OPEN ACCESS

012072

Substitution of commercial feed with fermented banana peel flour (*Musaceaea* sp.) and fish meal to crude protein, energy, crude lipid and organic matter of meat in siamese catfish (*Pangasius hypophthalmus*)

R Z Darmawan, S M Ghaisani, Agustono and M A Al-Arif

[+](#) Open abstract [View article](#) [PDF](#)
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.



OPEN ACCESS

012073

The effect of garlic (*Allium sativum*) and turmeric (*Curcuma longa*) extract addition in commercial feed on feeding rate, feed efficiency and feed conversion ratio of gouramy fish (*Osphronemus gouramy*)

D Afifah, M Arief and M A Al-Arif

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

012074

The Variability in Population Structure of Gastropods in Sedati Waters, Sidoarjo Regency, East Java

S Fadliyah, L A Sari, K T Pursetyo, A Zein, M H Idris and Y Cahyoko

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

012075

The effect of pH and incubation time on crude protease enzymes activity of *Bacillus mycoides* from anchovy isolates (*Stolephorus* sp.)

D Nirmala, P Yudha and D Cahyanto

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

012076

The influence of garlic (*Allium sativum*) and turmeric (*Curcuma longa*) extract as attractant in commercial feed on feeding rate and fat retention in gouramy (*Osphronemus gouramy*)

G Y Pamungkas, M Arief and M A A Arif

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

012077

Beardless barb *Cyclocheilichthys apogon* (Valenciennes, 1842) (*Cypriniformes*, *Cyprinidae*): Distribution extension and first record from South Bali

V Hasan, A Wijayanti, M B Tamam, R A Islamy and M S Widodo

[+ Open abstract](#)[View article](#)[PDF](#)**JOURNAL LINKS**[Journal home](#)[Journal scope](#)[Information for organizers](#)[Information for authors](#)[Contact us](#)[Reprint services from Curran Associates](#)

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.



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](#).



PAPER • OPEN ACCESS

Study of nitrogen (N) and phosphorus (P) in the land of mangrove sediments in ecotourism area Wonorejo Surabaya and coastal area of Jenu Tuban

To cite this article: N Pradipta *et al* 2021 *IOP Conf. Ser.: Earth Environ. Sci.* **679** 012048

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

You may also like

- [Measurement of Indonesian Marine Health Index to Assess The Health of The Coastal Ecosystem of Tuban, East Java](#)
M I Joesidawati and S Suwarsih
- [Simulation of tipping fee policy to support municipal waste management into alternative fuel in the cement industry: a case study of Tuban landfill Indonesia](#)
K K Ummatin and N Faria
- [Scaffolding worksheets as a medium of student learning during the COVID-19 pandemic in constructing proof of group problems](#)
Warli, P Rahayu and I Cintamulya



244th Electrochemical Society Meeting

October 8 – 12, 2023 • Gothenburg, Sweden

50 symposia in electrochemistry & solid state science

Abstract submission deadline:
April 7, 2023

Read the call for papers &
submit your abstract!

Study of nitrogen (N) and phosphorus (P) in the land of mangrove sediments in ecotourism area Wonorejo Surabaya and coastal area of Jenu Tuban

N Pradipta¹, M A Alamsjah^{2*} and E D Masithah²

¹Program Study of Aquaculture, Faculty of Fisheries and Marine, Universitas Airlangga, Kampus C Jalan Mulyorejo, Surabaya 60115 East Java, Indonesia

²Department of Marine, Faculty of Fisheries and Marine, Universitas Airlangga, Kampus C Jalan Mulyorejo, Surabaya 60115 East Java, Indonesia

*Corresponding author: alamsjah@fpk.unair.ac.id

Abstract. The mangrove forest is one of the wealth of natural resources in Indonesia. Based on data from the Ministry of Environment in 2006 that the Indonesian mangrove forest area reached 4.3 million hectares. Nutrient element N (nitrogen) and P (phosphorus) is an element that affect the growth of mangroves. The element nitrogen affect amount of photosynthesis that occurs in mangrove. Low uptake of phosphorus can cause plant tissue volume becomes smaller and the leaf color becomes darker. This study aims to measure the concentration of nitrogen and phosphorus in soil sediments obtained from the mangrove Ecotourism Wonorejo Surabaya and coastal Jenu Tuban. This research uses descriptive method through field surveys by sampling. Sampling was carried out at six points in each region. The results of this study showed that the highest nitrogen content was at the point A₄ coastal areas Jenu Tuban is 40.86%, while the lowest nitrogen content is at the point B₃ Ecotourism Mangrove Wonorejo Surabaya is 31.55%. Phosphorous levels are at their highest A₆ coastal areas Jenu Tuban is 0.043 ppm, while the phosphorus content is in the lowest point of the region B₃ Ecotourism Mangrove Wonorejo Surabaya is 0,021 ppm.

1. Introduction

Indonesia's mangrove forest is one of the largest in the world. Indonesia's mangrove forest area reaches 4.3 million hectares. Indonesia has mangrove forests covering an area of 3,062,300 hectares in 2005, which is 19% of the total area of mangrove forests worldwide [1]. However, from 1999 to 2005, the mangrove forest had decreased by about 64 percent. Currently, only 3.6 million hectares of mangrove forests in Indonesia are in good condition, the rest is in a damaged and moderate condition.

There are many abilities possessed by the mangrove ecosystem, one of them is smangrove ecosystem has a high capacity to neutralize excess nutrients and other pollutants [2]. The waters around mangroves are an area rich in nutrients, both organic and inorganic [3]. Each location in the mangrove ecosystem has different nutrient conditions. Nutrients have an important role in determining the ability of the soil to support plants [4]. Nutrient elements N (nitrogen) and P (phosphorus) are elements that affect mangrove growth. Nitrogen has an effect on the number of photosynthetic processes that occur in mangroves [5]. Nitrogen concentration in leaves is used to increase electron transport in the photosynthesis process. The amount of phosphorus in plants is smaller than that of nitrogen, but phosphorus is considered the key to life. Low phosphorus uptake can cause the volume of plant tissue to become smaller and the leaf color to darken [6].

There has been an overlap in the use of mangrove forest areas for various activities, such as logging of mangroves for firewood, building materials and other uses. Mangrove forest areas are also often converted into ponds and residential areas [7]. The exploitation of mangrove forests that has been carried out so far has caused damage so that it has reduced its ability to carry out its ecological and biological functions [8]. Damaged mangrove forests result in reduced nitrogen and phosphorus nutrients in the soil, so that if the nutrients in the soil are continuously reduced, it can cause a decrease in mangrove area. Based on this problem, the researchers were interested in examining the differences



in nitrogen and phosphorus content in the mangrove sediments obtained from Ecotourism Wonorejo and the Jenu coast.

2. Material and methods

2.1. Tools and material

The tools used in the mangrove soil sediment sampling include a shovel, 500 gr plastic, label paper, markers, rubber bands, black plastic bags, scales, digital cameras, soil pH meters, and refractometers. The materials used in this study were mangrove soil sediment samples obtained from the Ecotourism Mangrove Wonorejo area of Surabaya and the coast of Jenu, Tuban Regency.

2.2. Work procedure

The research method is used to solve a problem that can be done by collecting data through observation, surveys, or through experiments [9]. This study uses a descriptive method through field surveys with sampling. Samples were taken from the Ecotourism Mangrove Wonorejo area and the Jenu coast, Tuban Regency. The samples taken in this study were mangrove soil sediments. The mangrove soil sediments were taken directly based on the sampling area group, starting from the coastal area of Jenu District, Tuban Regency (points A1, A2, A3, A4, A5 and A6), and the Wonorejo Mangrove Ecotourism area (points B1, B2, B3, B4, B5 and B6), with samples were taken at each point randomly. Samples were taken as much as ± 300 g per point using a shovel. Soil sampling is done when the water is receding. The soil sample used was oxidized mangrove sediment (5 cm above the surface of the sediment). Each location was sampled 6 times. Samples taken are stored in plastic and given a sample number based on the group of sampling locations. The samples taken were then analyzed at the Surabaya City Center for Health Laboratory to determine the amount of nitrogen and phosphorus nutrient content in the sample.

2.3. Data analysis

The data analysis used is descriptive form, by presenting the data on the amount of nutrient content of nitrogen and phosphorus at each point of the sample sediment sampling area, then analyzed using the T-test (unpaired comparison). The use of the T-test is to compare the t count with the t table [9].

3. Results and discussions

The nitrogen test results from samples taken from two regions ranged from 31.55% - 40.86%. The highest nitrogen content of the two regions is located at point A4 (40.86%), while the lowest nitrogen content is at point B3 (31.55%).

Data on nitrogen nutrient content were analyzed by means of the T-test (unpaired comparison). The results of the T-test analysis (unpaired comparison) with a confidence interval of 95% showed that there was a very significant difference (Highly significance) between the nitrogen nutrient content in the coastal area of Jenu, Tuban Regency and Ecotourism Mangrove Wonorejo Surabaya.

Table 1. Nitrogen content test results

Location Points (Jenu Coast)	N (%)	Location Points (Wonorejo Ecotourism)	N (%)
A ₁	40.36	B ₁	31.67
A ₂	38.75	B ₂	34.56
A ₃	36.92	B ₃	31.55
A ₄	40.86	B ₄	38.04
A ₅	39.22	B ₅	31.75
A ₆	38.67	B ₆	33.58

The nitrogen nutrient content in this study had different results at each point (table 1). The highest nitrogen nutrient content in the coastal area of Jenu, Tuban Regency is located at point A4 (40.86%), while in the Ecotourism area of Wonorejo Surabaya it is located at point B4 (38.04%). This is because the two highest points are the closest to the river estuary, so they are rich in organic materials from rivers and the sea. One of the parts of the coast that has the highest fertility rate is the estuary area (river mouth) [10]. The highest nitrogen nutrient content of the two research areas was at point A4 (40.86%). The cause of the high nitrogen element at point A4 is not only because it is located close to the estuary, there are also geographical factors, there are many semi-intensive shrimp ponds in the vicinity of the Jenu coast, so it is suspected that the organic matter left over from cultivation is carried by currents around the river mouth. Most of the dead shrimp are also discarded and carried away by the river to become organic material. The addition of organic matter can increase the population of soil microorganisms, including fungi. Organic matter is used by soil microorganisms as a constituent of the body and energy source.

Nitrogen nutrient content in the Ecotourism Mangrove Wonorejo area is relatively lower, as seen in the nitrogen test results at points B1, B3, B5. This is because the location of taking point B1 is close to the resting place of the tourist boat and Ecotourism Mangrove Wonorejo canteen, so it is possible that there is boat and canteen waste which causes the nutrients at point B1 to be relatively lower. The nitrogen test result at point B3 was the lowest of the two research areas, which was only 31.55%. This is because at point B3 is the end of the jogging track of the Wonorejo Mangrove Ecotourism area. Point B5 is also relatively low at 31.75%, this is because point B5 is close to the gazebos of the Wonorejo Mangrove Ecotourism visitors. At points B3 and B5, many visitors spend time to rest enjoying the natural nuances of mangroves so that it is possible that there is a lot of inorganic waste falling to the ground and inhibiting the process of forming nitrogen nutrients in the soil. Nitrogen in the soil comes from organic matter and N_2 in the atmosphere [11]. Nitrogen can be said to be a charged nutrient. Apart from being absolutely necessary, it can easily be lost or become unavailable to plants. The unavailability of N from the soil can be done through the leaching process of NO_3^- , denitrification of NO_3^- to N_2 , volatilization of NH_4^+ to NH_3 , fixed by minerals or consumed by soil microorganisms.

There is a very real difference (Highly significance) ($P > 0.01$) between nitrogen nutrients in the coastal area of Jenu, Tuban Regency and nitrogen nutrients in the Mangrove Ecotourism Wonorejo Surabaya. The differences in the two coastal areas of are due to several reasons, one of which is due to the large number of inorganic waste and visitors so that decomposing bacteria cannot carry out the nitrification process. It is an enzymatic oxidation process of converting ammonium compounds into nitrate compounds carried out by certain bacteria. One of the factors that determines the high nitrification process is the number of bacteria found in the soil [12]. The amount of inorganic waste will affect the number of bacteria that carry out nitrification.

The results of the phosphorus test from samples taken from two regions ranged from 0.021ppm - 0.043ppm. The highest phosphorus content of the two regions is at point B3 (0.021ppm), while the lowest phosphorus content is at point A6 (0.043ppm).

Table 2. Phosphorus content test results

Location Point (Jenu Coast)	P (ppm)	Location Point (Wonorejo Ecotourism)	P (ppm)
A ₁	0.036	B ₁	0.032
A ₂	0.041	B ₂	0.038
A ₃	0.027	B ₃	0.021
A ₄	0.032	B ₄	0.029
A ₅	0.039	B ₅	0.032
A ₆	0.043	B ₆	0.038

The data on the nutrient content of phosphorus in table 2 were analyzed by means of the T-test (unpaired comparison). The results of the T-test analysis (unpaired comparison) with a confidence interval of 95% showed that there was no difference (non-significance) between the phosphorus nutrient content found in the coastal area of Jenu, Tuban Regency and Ecotourism Mangrove Wonorejo Surabaya.

The nutrient content of phosphorus in this study had different results at each point (table 2). The highest phosphorus nutrient content in the coastal area of Jenu, Tuban Regency is located at point A6 (0.043 ppm), while in the Ecotourism area of Wonorejo Surabaya it is located at points B2 (0.038 ppm) and B6 (0.038 ppm). The highest nitrogen nutrient content of the two research areas was at point A6 (0.043 ppm). The high phosphorus element at point A6 is caused by soil sediment that still contains rock. The lowest phosphorus nutrient content is at point B3 (0.021 ppm). This is because the location of point B3 has muddy sediments. Phosphorus can be found in water, soil and sediments. Unlike other material compounds, the phosphorus cycle cannot be found in air which has high pressure. This is because phosphorus is usually liquid at normal temperatures and pressures. It mainly cycles back through water, soil and sediment. Phosphorus exists in two forms, namely organic phosphate compounds (in plants and animals) and inorganic phosphate compounds (in water and soil). Organic phosphate (P) from dead animals and plants is broken down by a decomposer into inorganic phosphate. Inorganic phosphate dissolved in groundwater or sea water will erode and settle in marine sediments. Therefore, phosphate is abundant in rocks and fossils. Phosphates from rocks and fossils erode and form inorganic phosphates dissolved in ground and sea water. This inorganic phosphate will then be absorbed by the plant roots again. This cycle is repeated continuously. Phosphorus is present in bound form as Ca^+ phosphate, Fe^+ or Al^+ phosphate, phytate or protein. Bacteria that play a role in the phosphorus cycle: *Bacillus*, *Pseudomonas*, *Aerobacter aerogenes*, *Xanthomonas*. Microorganisms (*Bacillus*, *Pseudomonas*, *Xanthomonas*, *Aerobacter aerogenes*) can dissolve phosphorus so that it is readily absorbed by plants.

There was no significant difference in the phosphorus nutrient content ($P < 0.05$) between the phosphorus nutrients in the coastal area of Jenu, Tuban Regency and the phosphorus nutrients in the Ecotourism Mangrove Wonorejo Surabaya. There is no significant difference in the two coastal areas of Jenu and Ecotourism Mangrove Wonorejo due to several reasons, one of which is that the mangrove habitat is both muddy, slightly rocky, where mud can affect carbon oxidation, nitrification, denitrification, and biological elimination of phosphorus.

Table 3. pH Measurement Results

Location Point (Jenu COast)	pH	Location Point (Wonorejo Ecotourism)	pH
A ₁	7.4	B ₁	7.1
A ₂	7.6	B ₂	6.9
A ₃	6.8	B ₃	6.9
A ₄	7.2	B ₄	6.7
A ₅	7.3	B ₅	7.1
A ₆	7.9	B ₆	7.0

The results of pH measurements in table 3 shows that the pH at the 12 research points from the two locations was not much different, ranging from 6.7-7.9. The highest pH test result is at point A6 (7,9), while the lowest pH test result is at point B4 (6,7). The results of the salinity measurement shown in Table 5.4 represents the salinity from each point varies widely, ranging from 22-33ppt. The highest salinity test results are at point A1, A4, A5, A6 (33 ppt), while the lowest salinity test result is at point B1 (22 ppt). At low pH soil, nitrate ion is absorbed more quickly by plants than ammonium ion, meanwhile at high pH soil, Ammonium ion is absorbed by plants faster than nitrate ion and at neutral pH absorption. The process occurs in balance [13].

Table 4. Salinity Measurement Results

Location Points (Jenu Coast)	Salinity (ppt)	Location Points (Wonorejo Ecotourism)	Salinity (ppt)
A ₁	33	B ₁	22
A ₂	32	B ₂	23
A ₃	32	B ₃	23
A ₄	33	B ₄	30
A ₅	33	B ₅	31
A ₆	33	B ₆	31

Salinity is one of the factors that determines the development of mangroves, so that the zoning of each mangrove habitat is different according to local environmental conditions. Based on the research, the salinity in the two research areas has a range of 32 - 33 ppt for the Jenu coast of Tuban Regency, and 22 - 31 ppt for the Mangrove Ecotourism Wonorejo Surabaya. This is because the research location is influenced by fresh water from rivers. The number of rivers that flow into the sea, cause the salinity to be lower, and conversely, the fewer rivers that flow into the sea, the higher the salinity [6].

4. Conclusion

The result of this research is that the coastal area of Jenu, Tuban Regency has a better potential for mangrove growth than in the mangrove ecotourism area of Wonorejo Surabaya, as evidenced by the higher nitrogen content in the coastal area of Jenu, Tuban Regency. It is necessary to do further research on nutrients that can support mangrove growth, so that the development of mangrove area is expected to be more rapid based on the area potential and important functions of mangroves in the fisheries sector.

5. References

- [1] FAO 2007 *The World's Mangroves 1980-2005, A Thematic Study Prepared in the Framework of the Global Forest Resources Assessment 2005* (Rome: FAO Forestry Paper)
- [2] Tam N F Y and Wong Y S 2011 *J Environ Qual* **28**, 556-564
- [3] Melana D M Atchue, J Yao, C E Edwards, R Melana, E E and Gonzales H I 2008 *Mangrove Management Handbook*. (Manila, Philipinnes: Coastal Resource Management Project of The Departement of Environment and Natural Resources) p 96
- [4] Ma'shum M, Soedarsono J, and Susilowati L E 2008 *Biologi Tanah* CPIU Pasca IAEUP. (Jakarta: Ditjen Pendidikan Tinggi, Departemen Pendidikan Nasional)
- [5] Feller I C, Whigham D F, McKee K L, and Lovelock C E 2012 *Oecologia* **134**, 405-414
- [6] Romimohtarto K and Juwana S 2007 *BIOLOGI LAUT: Ilmu Pengetahuan Tentang Biota Laut* (Jakarta: Djambatan)
- [7] Nontji A 2007 *Laut Nusantara Edisi Revisi 2007* (Jakarta: PT Djambatan) p 106-107
- [8] Graha Y I, Z Hidayah W A, and Nugraha 2009 *J Kelautan* **2**(2), 23-35
- [9] Kusningrum 2010 *Perancangan Percobaan* (Surabaya: Airlangga University Press)
- [10] Supriyadi I H 2011 *J Oseana* **24**(4)

- [11] Sutanto R 2012 *Dasar-Dasar Ilmu Tanah, Konsep dan Kenyataan* (Yogyakarta: Kanisius) p 36
- [12] Suriawiria U 2008 *Mikrobiologi Air dan Dasar-Dasar Pengolahan Buangan Secara Biologis* (Bandung: Penerbit Alumni Bandung)
- [13] Rosmarkam A dan N W Yuwono 2007 *Ilmu Kesuburan Tanah* (Yogyakarta: Kanisius)