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## ASEAN-FEN INTERNATIONAL FISHERIES SYMPOSIUM – 2017

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*Projecting ASEAN FEN-Plus for Sustainable  
Aquaculture, Fisheries and Aquatic Ecosystem*

Batu City, Indonesia. November 07-09, 2017



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## Preface

The 7<sup>th</sup> ASEAN-FEN International Fisheries Symposium was successfully held in Batu, East Java, Indonesia 7 – 9 November 2017. The conference was hosted by Faculty of Fisheries and Marine Science, Brawijaya University Malang Indonesia. The theme of this symposium was “Projecting ASEAN FEN Plus for Supporting Sustainable Aquaculture, Fisheries and Aquatic Ecosystems”, with focus on the advanced innovation to address to the newly emerged issues in aquaculture, fisheries and aquatic ecosystems for the synergies between socioeconomic development and protecting natural resources and the environment.

The conference was attended by over 500 researchers from different countries, who presented and discussed the results of their work within the framework of five main areas: 1. Aquaculture, 2. Sustainable fisheries and management, 3. Seafood processing and biotechnology, 4. Aquatic resources, biodiversity and environment, and 5. Fisheries Economic.

ASEAN-FEN IFS 2017 Committee received more than 120 manuscripts from participated universities and research institutes, and 106 manuscripts were accepted for publication. All of the papers were subjected to peer-review by qualified experts in the field selected by the conference committee. The papers selected depended on their quality and their relevancy to the conference.

We would like to thank all the authors who have contributed to this volume and also to the board members, organizing committee, reviewers, speakers, chairpersons, sponsors and all the conference participants for their support to the ASEAN-FEN IFS 2017.

Warm Regards,

**Dr.Sc. Asep Awaludin Prihanto, S.Pi., MP.**

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### Preface

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### Preface

The 7<sup>th</sup> ASEAN-FEN International Fisheries Symposium was successfully held in Batu, East Java, Indonesia 7 – 9 November 2017. The conference was hosted by Faculty of Fisheries and Marine Science, Brawijaya University Malang Indonesia. The theme of this symposium was "Projecting ASEAN FEN Plus for Supporting Sustainable Aquaculture, Fisheries and Aquatic Ecosystems", with focus on the advanced innovation to address to the newly emerged issues in aquaculture, fisheries and aquatic ecosystems for the synergies between socioeconomic development and protecting natural resources and the environment.

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List of Organizing committee, Conference Photographs are available in this article.

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011002

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## Papers

### AQUACULTURE

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Detection and analysis of hemolysin genes in *Aeromonas hydrophila* isolated from Gouramy (*Osphronemus gouramy*) by polymerase chain reaction (PCR)

Rozi, K Rahayu and D N Daruti

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012002

The effect of thallus spreading method on productivity of *Gracilaria* sp. culture

R Hidayatulbaroroh, M Nurhudah, M H Edy and Suharyadi

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012003

Study on characterization, pathogenicity and histopathology of disease caused by *Aeromonas hydrophila* in gourami (*Osphronemus gouramy*)

Rozi, K Rahayu, D N Daruti and M S P Stella

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012004

The growth performance of F1 transgenic mutiara catfish

Iskandar, I D Buwono and M U K Agung

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012005

Nitrite oxidizing bacteria for water treatment in coastal aquaculture system

S Noorak, S Rakkhiaw, K Limjirakhajorn, A Uppabullung, T Keawtawee and Y Sangnoi

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012006

Effect of alkaloids derived from jellyfish (*Aeginura* sp.) on the intestinal histopathology and relative percentage survival (RPS) of tiger grouper (*Epinephelus fuscoguttatus*) infected by *Vibrio harveyi*

S Andayani, M Fajar and M F Rahman

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012007

The influence of supplemented *Curcuma* in feed formulation to improve growth rate and feed efficiency of catfish (*Clarias* sp.)

M M Ulum, M Zubaidah, M Arief and Prayogo

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012008

The effect of differences in altitude location of an aquaculture on fish's hematocrit and fish's haemoglobin of Carp fish and resistance to bacterial attack

Rosidah, A Rizal, I Rustikawati and F Octavia

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012009

Characterization of phytase enzymes as feed additive for poultry and feed

M Lamid, A Al-Arif, O Asmarani and S H Warsito

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012010

The effect of the addition of cow brain powder in commercial feed on the gonadal maturity of comet goldfish (*Carassius auratus auratus*)

Y Andriani, U Subhan, Rosidah, Iskandar, I Zidni and A M Abdillah

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012011

The effect of colchicine on the size and bioactive compound of microalgae *Spirulina platensis*

A Mahardika, A T Mukti and M Arief

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012012

Quality characteristics of Bali sardinella (*Sardinella lemuru*) oil purified with bentonite as an adsorbent

U Nadhiro, S Subekti, W Tjahjaningsih and Patmawati

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012013

Effect of feeding silkworm on growth performance and feed efficiency of snakehead (*Channa striata*)

U Firmani and Lono

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012014

The identification of plankton, water quality, blood cell, and histology in culture pond of tilapia *Oreochromis niloticus* which infected by viral nervous necrosis (VNN)

U Yanuhar, D T Rahayu, M Musa and D Arfiati

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Effect of mercury chloride to number of melano-macrophage centers on the kidney of carp fish (*Cyprinus carpio*)

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012016

The effects of season, aeration and light intensity on the performance of pacific whiteleg shrimp (*Litopenaeus vannamei*) polycultured with seaweed (*Gracilaria verrucosa*)

T Susilowati, Desrina, J Hutabarat, S Anggoro, M Zainuri, Sarjito, F Basuki and T Yuniarti

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012017

The Effect of maceration period on contents and color brightness of phycoerythrin from *Gracilaria* sp.

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012018

Culture of *Daphnia* sp. (crustacean – cladocera): the effect of manure variation on the growth, natality, and mortality

H Herman, Y Andriani, A Sahidin, T Hidayat and T Herawati

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012019

The effects of salinity and temperature shock on *Kappaphycus alvarezii* seaweed spores release

F K Harwinda, W H Satyantini and E W Masithah

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012020

Effectivity of immunostimulant from *Zoothamnium penaei* protein membrane for decreasing the mortality rate of white shrimp (*Litopenaeus vannamei*) in traditional plus pond

G Mahasri, R Kusdarwati, Kismiyati, Rozi and H Gustrifandi

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012021

The fecundity of fork-tailed threadfin bream (*Nemipterus furcosus*) in Bangka, Bangka Belitung

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012022

The effect of *Chaetoceros calcitrans* extract on hematology common carp (*Cyprinus carpio*) infected by *Aeromonas salmonicida*

Maftuch, N D A Wulan, H Suprastyani, E Wijayanto, M Noercholis, A A Prihanto and A Kurniawan

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012023

The motility and motion duration of jatimbulan tilapia (*Oreochromis niloticus*) spermatozoa in different salinity

J Triastuti, D Kintani, E M Luqman and D Y Pujiastuti

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012024

Immune response and parasitic infestation on Pacific white shrimp (*Litopenaeus vannamei*) in immuno-probio circulation system (SI-PBR) in ponds

G Mahasri, P D W Sari and Prayogo

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The effects of different concentrations of ccBA-GFP promoter with electroporation methods on the quality of koi sperm (*Cyprinus carpio* var. koi)

A Soeprijanto and D Aisyah

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012026

Analysis of growth performance and benefits of a high density catfish *Clarias gariepinus* Burchell culture in biofloc system

F Basuki, T Yuniarti, D Harwanto and T Susilowati

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Performance efficiency of feed utilization, relative growth rate, and survival rate of common carp (*Cyprinus carpio*) through the addition of phytase in the feed

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012028

The effect of hydrogen peroxide on N/P ratio and phytoplankton diversity in Vannamei shrimp (*litopeneus vannamei*) ponds in Banyuwangi, East Java

D N Daruti, Rozi and K Rahayu

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The identification of plankton tropical status in the Wonokromo, Dadapan and Juanda extreme water estuary

L A Sari, W H Satyantini, A Manan, K T Pursetyo and N N Dewi

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012030

Effect of maggot (*Hermetia illucens*) flour in commercial feed on protein retention, energy retention, protein content, and fat content in tilapia (*Oreochromis niloticus*)

D R Kurniawan, M Arief, Agustono and M Lamid

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Anti-leech activity of *Scutellaria baicalensis* and *Morinda citrifolia* extracts against *Piscicola geometra*

P N Rizky, T C Cheng and H Nursyam

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012032

Effect of earthworm (*Lumbricus rubellus*) in feed formulation to improve fatty acids profile in eel (*Anguilla bicolor*) meat

K Farah, I R Gunawan, G B Putra, Agustono, W P Lokapirnasari, M Lamid, E D Masithah, T Nurhajati and Rozi

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The effect of earthworms (*Lumbricus rubellus*) in feed formulation on growth and retention of eel (*Anguilla bicolor*)

P C Jatmiko, N A Madinah, Agustono and T Nurhajati

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012034

Increasing  $\beta$ -carotene content of phytoplankton *Dunaliella salina* using different salinity media

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Abnormalities of hybrid grouper (*Epinephelus fuscoguttatus* x *Epinephelus lanceolatus*) in Situbondo

J Triastuti, K T Pursetyo, A Monica, L Lutfiyah and D S Budi

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M Bachruddin, M Sholichah, S Istiqomah and A Supriyanto

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The comparison of heavy metals (Pb and Cd) in the water and sediment during spring and neap tide tidal periods in Popoh Bay, Indonesia

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The implementation of vessel-sinking policy as an effort to protect Indonesian fishery resources and territorial waters

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Analysis on traditional fishing grounds in Indonesia's Natuna waters under International Law

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D Arfiati, D P Arsanti, D R Suci, A Kurniawan, U Zakiyah and H F Kharismayanti

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## Validation of potential fishing zone forecast using experimental fishing method in Tolo Bay, Central Sulawesi Province

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## Characterization of elasticity and hydration of composite hydrogel based on collagen-iota carrageenan as a corneal tissue engineering

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## The biomass, abundance, and distribution pattern of starfish *Asterias* sp. (Echinodermata: Asteroidea) in East Coast of Surabaya

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## The exploration of trophic structure modeling using mass balance Ecopath model of Tangerang coastal waters

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## Phytochemical compounds of *Enhalus acoroides* from Wanci Island (Wakatobi) and Talango Island (Madura) Indonesia

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012046

## Development of an aquaculture system using nanobubble technology for the optimization of dissolved oxygen in culture media for Nile tilapia (*Oreochromis niloticus*)

G Mahasri, A Saskia, P S Apandi, N N Dewi, Rozi and N M Usuman

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## Clustering and estimating fish fingerling abundance in a tidal river in close proximity to a thermal power plant in Southern Thailand

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First records of bentfin devil ray (*Mobula thurstoni*) and the examination in physical factors of its habitat in the western waters of Morotai Island (North Moluccas)

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The percentage of coral reef cover in Saonek Kecil Island, Raja Ampat, West Papua

D A Wiguna, E D Masithah and A Manan

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Marine tourism and the locations of protected turtles on Sukamade Beach, Meru Betiri National Park, East Java

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The prevalence and intensity of gastrointestinal endoparasite worms of cantang grouper (*Epinephelus fuscoguttatus - lanceolatus*) on floating net cages at Lamong Bay Surabaya, Indonesia

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Crab and shellfish occurrences in the newly-grown mangrove habitats in southern Thailand

P Yeesin, S Bautip and S Chesoh

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Monogenean parasites on cantang grouper (*Epinephelus fuscoguttatus- lanceolatus*) wilture in floating net cage for mariculture center Lombok, West Nusa Tenggara, Indonesia

N T B Dewi, I F Aryadi, A F T Arrizal, D R Mardika, P A Syahputra, S Subekti, Kismiyati and P D W Sari

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Preliminary design of a low-cost greenhouse for salt production in Indonesia

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## Proximate composition of several fish from Jatigede Reservoir in Sumedang district, West Java

T Herawati, A Yustiati, A Nurhayati and R Mustikawati

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012056

The isolation and identification of endophytic bacteria from mangrove (*Sonneratia alba*) that produces gelatinase

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Alternative bioenergy through the utilization of *Kappaphycus alvarezii* waste as a substitution of substrate for biogas products

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## Methallothionein expression on the gills and stomach of Chinese pond mussels exposed to lead (Pb)

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The effect of amino acid lysine and methionine addition on feed toward the growth and retention on mud crab (*Scylla serrata*)

Y R Alissianto, Z A Sandriani, B S Rahardja, Agustono and Rozi

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The antagonistic activity of lactic acid bacteria isolated from *peda*, an Indonesian traditional fermented fish

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Biochemical and physicochemical analysis of fish protein isolate recovered from red snapper (*Lutjanus* sp.) by-product using isoelectric solubilization/precipitation method

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## Biofilm as a bioindicator of Cr VI pollution in the Lotic Ecosystems

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The potential of mangrove *Avicennia marina* and *A. Alba* from Nguling district, Pasuruan, East Java as an antioxidant

F Iranawati, F Muhammad, H Fajri, R D Kasitowati and S Arifin

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012064

The reducibility of heLa cell viability by *Sargassum polycystum* extracts

M Firdaus, D Setijawati, I Islam, H Nursyam, H Kartikaningsih, H S Yufidasari, A A Prihanto, R Nurdiani and A A Jaziri

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Blue carbon content of mangrove vegetation in Subang district

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Polyculture Engineering technology of *larasati* red tilapia (*Oreochromis niloticus*) and white shrimp (*Litopenaeus vannamei*) based for protease enzyme

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The physico-chemical properties of pangas catfish (*Pangasius pangasius*) skin gelatin

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Evaluation of the proximate quality of the combination of Tuna (*Thunnus albacares*) and white oyster mushroom (*Pleurotus ostreatus*) nuggets

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## The effect of colchicine on the size and bioactive compound of microalgae *Spirulina platensis*

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# The effect of colchicine on the size and bioactive compound of microalgae *Spirulina platensis*

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**Abstract.** Polyploidy is one of the techniques used to increase the genetic variant and once used as a breeding method of plant. Colchicine is one of the chemical which apply to produce polyploid organisms, such as plant. This study aimed to determine the effect of colchicine on the size and phycocyanin content of *Spirulina platensis*. Research was used six treatments of colchicine concentration with three replications. *S. platensis* were immersed in the colchicine solution for 12 hours and were observed for 5 days culture. This research was showed that colchicine concentration of 0.1 % were resulted highest diameter of *S. platensis* (12.57  $\mu\text{m}$ ) while high phycocyanin content obtained by treatment of 0.025 % (0.091 mg/ml).

## 1. Introduction

Microalgae have been developed for the purpose of research and technology. The development of microalgae has advantages in terms of fast growth and high fat and protein content [1]. *S. platensis* are microalgae with complete and high protein content [2]. *S. platensis* are small in size, and their threads consist of a series of cylindrical cells of trichomes with thin cell wall diameter of 1-12  $\mu\text{m}$  [3]. The high phycocyanin content in these microalgae causes blue-green color. *S. platensis*'s trichomes have a spiral structure with filaments, but they have no heterocyst [4]. High demand for *S. platensis* greatly impacts on the need for the improvement of their quality. One of the alternative to improve *S. platensis*'s quality is changing them into polyploid. Polyploidy has been used to increase genetic variance [5]. Polyploidy can be obtained by using colchicine.

Colchicine, chemicals when administered to plants, can result in polyploid individuals. Common traits displayed by polyploid plants are bigger size and larger parts such as roots, stems, leaves, flower and fruit [6]. High colchicine concentration and soaking time are not sufficient for producing polyploid individuals [7]. Most studies on polyploidy have been conducted on plants, such as onion [8], garden balsam and soybean, while on microalgae, the effects of colchicine treatment are yet to be known. This study was aimed to investigate the effect of colchicine treatment on the diameter and phycocyanin content of *S. platensis*.

## 2. Methodology

This research was conducted at Laboratory of Fisheries Education, Faculty of Fisheries and Marine, University of Airlangga Surabaya.



### 2.1. Preparation of *S. platensis* culture

Some instruments and media were used for *S. platensis* culture prior to sterilization using autoclave [9,10]. The *S. platensis* used for culture were collected from Brackishwater Aquaculture Development Center (BADC) Situbondo. Walne fertilizer with a concentration of 0.1 % (v/v) was used to improve the growth of *S. platensis* population. The initial stock density of *S. platensis* was  $1 \times 10^4$  cells/mL. Calculation of the cell according to Satyantini [11].

$$V1 = \frac{N2 \times V2}{N1} \quad (1)$$

Note:

V1 = volume of seed for initial stocking (ml)

N1 = density of plankton seeds (cells / ml)

V2 = volume of desired culture media (ml)

N2 = density of desired plankton seed (cells / ml)

### 2.2. Calculation of *S. platensis* Density

The population growth of *S. platensis* was observed every day in five days of culture by calculating the density according to Octhreeani [12].

$$\text{Phytoplankton density (cells / mL)} = \frac{na+nb+nc+nd+ne}{5 \times 4 \times 10^{-6}} \quad (2)$$

Note:

na, nb, nc, nd, ne = number of cells of *S. platensis* in box a, b, c, d, e

5 = number of boxes counted

$4 \times 10^{-6}$  = area of small box ( a, b, c, d or e)

### 2.3. Treatment of Colchicine Solution

The doses of colchicine used were 0.01, 0.025, 0.05, 0.075 and 0.1% (w/v), and one treatment without colchicine solution served as control. Each treatment was triplicates. The colchicine solution treatments were administered 90 minutes after the initial culture of *S. platensis*. The immersion of *S. platensis* in the colchicine solution was conducted for 12 hours.

### 2.4. Measurement of *S. platensis*'s Size

The diameter of *S. platensis* was measured every day using a microscope camera completed with OpticLab and ImageRastersoftware on the computer.

### 2.5. Measurement of *S. platensis*'s Phycocyanin Content

The phycocyanin extract of *S. platensis* was modified according to Lorenz [13] method. An acetic acid solution (pH 7) was added to the *S. platensis* sample at a ratio of 1:5 (v/w). Then, the mixture of acetic acid solution and *S. platensis* was shaken using a vortex. The sample was stored for 24 hours. The mixture was shaken and centrifuged to separate phycocyanin from biomass. The centrifugation was conducted at a minimum speed of 3.500 rpm for 5 minutes. Afterwards, the extraction was tested on a spectrophotometer at wavelengths of 652 and 620 using equation 1 [14]:

$$\text{CPC} = \frac{(\text{OD}_{620} - 0.474\text{OD}_{652})}{5.34} \quad (3)$$

## 3. Result and Discussion

### 3.1. Diameter *Spirulina platensis*

Based on the observations of the diameter of *S. platensis* from day 1 to day 5 showed that the dose of colchicine had a significant effect on the diameter of *S. platensis*, which is presented in table 1. The

data was analysed using analysis of varians and Tuckey test. The Tuckey test results showed that the largest diameter observed at a concentration of 0.1. The smallest diameters of control observed on day 1 and 2 were 7.91 and 8.23  $\mu\text{m}$ , respectively. In addition, the smallest diameters observed at a concentration of 0.01 on day 1 and 2 were 8.45 and 9.34  $\mu\text{m}$ , respectively. This happened because the doses administered were easily absorbed by *S. platensis*. The colchicine concentration and the dipping duration were not appropriate, thus polyploid individuals would not be produced by nature [7].

**Table 1.** Diameter of colchicine-immersed *S. platensis* in different concentrations.

Day	Concentration of Colchicine (%)					
	0 (Control)	0.01	0.025	0.05	0.075	0.1
1	7.91 <sup>a</sup> ±0.02	8.44 <sup>b</sup> ±0.02	8.93 <sup>c</sup> ±0.01	9.34 <sup>d</sup> ±0.01	9.59 <sup>e</sup> ±0.01	11.25 <sup>f</sup> ±0.01
2	8.23 <sup>a</sup> ±0.21	9.33 <sup>b</sup> ±0.02	9.83 <sup>c</sup> ±0.01	10.02 <sup>d</sup> ±0.03	11.18 <sup>e</sup> ±0.01	11.43 <sup>f</sup> ±0.06
3	9.10 <sup>a</sup> ±0.02	9.37 <sup>b</sup> ±0.01	11.28 <sup>c</sup> ±0.02	11.67 <sup>d</sup> ±0.01	11.72 <sup>d</sup> ±0.01	12.20 <sup>e</sup> ±0.01
4	9.59 <sup>a</sup> ±0.02	10.50 <sup>b</sup> ±0.02	11.41 <sup>c</sup> ±0.02	11.98 <sup>d</sup> ±0.01	12.09 <sup>e</sup> ±0.01	12.19 <sup>f</sup> ±0.01
5	9.70 <sup>a</sup> ±0.07	10.54 <sup>b</sup> ±0.01	11.65 <sup>c</sup> ±0.01	12.17 <sup>d</sup> ±0.02	12.46 <sup>e</sup> ±0.01	12.47 <sup>e</sup> ±0.02

Note: Data represent as means±SD. Different superscript in the same row indicates significant differences (P<0.05).

*S. platensis* undergoes four phases, namely adaptation phase, exponential phase, stationary phase and death phase. Adaptation phase, was shown on day 1 in all treatments. The second phase was the exponential phase, which began on day 2 in all treatments. In this phase cell division started. The third phase is the exponential phase, which was characterized by increasing cell density.

The fourth phase was the stationary phase, which was characterized by slow increase of cells although the number of living cells remains. Every treatment in this research demonstrated stationary phase, which began on the third day. The last phase was marked with increased number of cell deaths and decreased density of *S. platensis*.

### 3.2. *S. platensis*'s phycocyanin content

Phycocyanin is a protein compound that belongs to the phycobilliprotein group like allophycocyanin and phycoeritrin. The whole phycobilliprotein group is insoluble in water and forms a compound attached to the phycobilisometilacoid membrane. Phycocyanin functions as the main photosynthetic pigment in *S. platensis* and as a store of reserves of nitrogen and amino acids.

Based on the results of this study, *S. Platensis*'s highest phycocyanin content was found after the administration of colchicine at a dose of 0.025 % and concentration of 0.1 %, which showed no significant difference from the result demonstrating the lowest phycocyanin content at a concentration of 0.1 % and colchicine highest dose of 0.1 %. This is consistent with the statement of Sofia [7] that administration of colchicine at improper concentration can cause a failure in plant breeding. The phycocyanin content in *S. platensis* can be seen in table 2.

**Table 2.** Average content of phycocyanin *S. platensis*.

Concentration of Colchicine (%)	Content of Phycocyanin
0 (Control)	0.034 <sup>a</sup> ± 0.00
0.01	0.081 <sup>d</sup> ± 0.00
0.025	0.091 <sup>e</sup> ± 0.00
0.05	0.071 <sup>c</sup> ± 0.00
0.075	0.058 <sup>b</sup> ± 0.00
0.1	0.033 <sup>a</sup> ± 0.00

Note: Data represent as means±SD. Different superscript in the same row indicates significant differences (P<0.05).

#### 4. Conclusion

The research results showed that the administration of colchicine at different doses affected the diameter and phycocyanin content of *S. platensis*.

#### 5. References

- [1]. Sheehan et al 1998 A Look Back at the US Department of Energy's Aquatic Species Program Biodiesel From Algae (Colorado: National Renewable Energy Laboratory)
- [2]. Amanatin D R danNurhidayati T 2013 *Sci. Art Pomits* **2** 2337-3520 (In Indonesia)
- [3]. Hariyati R 2008 *J. Bioma Res.* **10** 19-22 (In Indonesia)
- [4]. Kabede E and Ahlgren G 1996 *Hydrobiology* 332: 99-109
- [5]. Dinarti D; Yudiwanti and Rahayuningsih S 2006 *J. Sci. Art Pomits* **2** 88-91(In Indonesia)
- [6]. Chahal G S and Gosal S S 2002 Principles and procedures of plant breeding biotechnological and conventional approaches (United Kingdom: Alpha Science International Ltd. Harrow)
- [7]. Sofia D 2007 Effect of concentration and duration of colchicine administration on growth and polyploidy in vitro-cultured young soybean (North Sumatera: Faculty of Agriculture University of North Sumatera) (In Indonesia)
- [8]. Suminah, Sutarno and Setyawan A D 2002 *Biodiver.* **6** 174-180 (In Indonesia)
- [9]. Ekawati A W 2005 *Module of Live Feed Culture* (Malang: Faculty of Fisheries Brawijaya University) p 91(In Indonesia)
- [10]. Purnamawati F S, Soeprbowati T R and Izzati M 2013 Growth of *Chlorella vulgaris* Beijerinck in medium with Cd and Pb content at laboratory scale (Semarang : National Seminar on Biology) pp 104-116 (In Indonesia)
- [11]. Satyantini W H and Masithah E D 2008 Practical modul of live feed culture (Surabaya: Faculty of Fisheries and Marine University of Airlangga) p 91 (In Indonesia)
- [12]. Othreani A M, Supriharyono and Soedarsono P 2014 *J. Maquares* **3** 102-108
- [13]. Lorenz R T 1998 *J Cell Biol.* **58** 419
- [14]. Arlyza I 2005 *J. Oceano.* **3** 27-36 (In Indonesia)