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

Judul (Artikel)	:	Mathematical Analysis for the Optimization of Wastewater Treatment Systems in Facultative Pond Indicator Organic Matter Penulis : **Sunarsih**, Widowati, Kartono, Sutrisno			
Jumlah Penulis	:	4 orang			
Status Pengusul	:	Penulis pertama/~~penulis kedua~~/~~penulis korespondensi~~			
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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
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b. Ruang lingkup dan kedalaman pembahasan (30%)	7	7	7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	7,25	6,5	6,88
d. Kelengkapan unsur dan kualitas penerbit (30%)	7,5	7	7,25
Total = (100%)	24,25	22,5	23,38
	14,55	13,5	14,03

Semarang, 6 April 2020

Reviewer 2

Prof. Dr. Heri Sutanto, SSi., MSi.
NIP. 197502151998021001
Unit kerja : Departemen Fisika, FSM UNDIP

Reviewer 1

Prof. Drs. Mustafid, M.Eng., Ph.D.
NIP. 195505281980031002
Unit kerja : Departemen Statistika, FSM UNDIP

LEMBAR
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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	**Nilai Maksimal Prosiding Ilmiah**			**Nilai Akhir Yang Diperoleh**
	Prosiding Internasional Terindeks 30	**Prosiding Internasional** ☐	**Prosiding Nasional** ☐	
a. Kelengkapan unsur isi prosiding (10%)	3,00			2,5
b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00			7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00			7,25
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	9,00			7,5
Total = (100%)	30,00			24,25
Nilai Pengusul = 60%x24,25=14,55				

Catatan penilaian Artikel oleh Reviewer :
a) Penulisan pada setiap unsur cukup baik
b) Merupakan penelitian terapan, pembahasan masih kurang.
c) Kemutakhiran masih kurang, referensi lama masih banyak.
d) Terbitan dari E3S Web of Conf. relatif Cukup baik

Semarang, 6 April 2020
Reviewer 1

Prof. Drs. Mustafid, M.Eng., Ph.D.
NIP. 195505281980031002
Unit kerja : Departemen Statistika, FSM UNDIP

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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding Ilmiah			Nilai Akhir Yang Diperoleh
	Prosiding Internasional Terindeks 30	Prosiding Internasional ☐	Prosiding Nasional ☐	
a. Kelengkapan unsur isi prosiding (10%)	3,00			2
b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00			7
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00			6,5
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	9,00			7
Total = (100%)	30,00			22,5
Nilai Pengusul = 60%*22,5=13,5				

Catatan penilaian Artikel oleh Reviewer :
a) Kelengkapan unsur isi artikel cukup baik.
b) Ruang lingkup kedalaman kajian optimasi pada masalah waste water treatment
c) Optimasi dilakukan dengan pendekatan linier program
d) Analisis dilakukan cukup rinci dengan meimplementasi pada kasus Sewon-Bantul.
e) Makalah terbit di prosiding Internasional yang terindeks di Scopus.

Semarang, 23 Maret 2020
Reviewer 2

Prof. Dr. Heri Sutanto, SSi., MSi.
NIP. 197502151998021001
Unit kerja : Departemen Fisika, FSM UNDIP

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Semarang; Indonesia; 15 August 2017 through 16 August 2017; Code 134717

Mathematical Analysis for the Optimization of Wastewater Treatment Systems in Facultative Pond Indicator Organic Matter (Conference Paper) (Open Access)

Sunarsih [a,b], Widowati[a], Kartono[a], Sutrisno[a]

[a] Department of Mathematics, Faculty of Science and Mathematics, Diponegoro University, Semarang, Indonesia
[b] Doctoral Program of Environmental Science, School of Postgraduate Studies, Diponegoro University, Semarang, Indonesia

Abstract

View references (7)

Stabilization ponds are easy to operate and their maintenance is simple. Treatment is carried out naturally and they are recommended in developing countries. The main disadvantage of these systems is large land area they occupy. The aim of this study was to perform an optimization of the wastewater treatment systems in a facultative pond, considering a mathematical analysis of the methodology to determine the model constrains organic matter. Matlab optimization toolbox was used for non linear programming. A facultative pond with the method was designed and then the optimization system was applied. The analyse meet the treated water quality requirements for the discharge to the water bodies. The results show a reduction of hydraulic retention time by 4.83 days, and the efficiency of of wastewater treatment of 84.16 percent. © 2018 The Authors, published by EDP Sciences.

SciVal Topic Prominence

Topic: Stabilization ponds | Pond | Stabilization

Prominence percentile: 81.889

Indexed keywords

Engineering controlled terms: Biogeochemistry, Biological materials, Developing countries, Information systems, Information use, Lakes, MATLAB, Nonlinear programming, Organic compounds, Ponding, Reclamation, Wastewater treatment, Water quality

Engineering uncontrolled terms: Facultative pond, Hydraulic retention time, Mathematical analysis, MATLAB optimization toolbox, Optimization system, Quality requirements, Wastewater treatment system, Waterbodies

Engineering main heading: Chemicals removal (water treatment)

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KEYNOTE SPEAKER

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Karlsruhe Institute of Technology KIT, Institute of Biology for Engineers and Biotechnology of Wastewater Treatment, Germany
"Energy supply from wastewater treatment and biowaste digestion to reduce environmental burden"

Dr. Bambang Setiadi
Chairman of National Research Council –
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Himlal Baral, PhD
Center for International Forestry Research (CIFOR)
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"Potential Of Pongamia For Bioenergy And Restoration Of Degraded Land In Indonesi"

Prof. Dr. Claudia Gallert
University of Applied Science Emden Leer, Faculty of Technology, Division Microbiology Biotechnology, Germany
"Multiresistant bacteria in aqueous environment"

Prof. Peter Gell
Water Research Network
Federation University Australia
"Management to insulate ecosystem services from the effects of catchment development"

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Sustainable Energy Systems and Policy Research Cluster
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Prof. Dr. Teddy Mantoro, SMIEEE
Sampoerna University, Faculty Engineering and Technology
"Towards Smart Information Systems: Exploitation on Intelligent Speech News and Tracking User Location Indoor"

PROGRAM

1ST DAY, TUESDAY, 15 AUGUST 2017 – PLENARY SESSION	
Time	**Program**
07.00 – 08.15	Registration
08.15 – 08.45	Opening Ceremony
08.45 – 09.00	Coffee Break 1
09.00 – 11.00	**Plenary Lecture & Discussion (1)** • Prof. Josef Winter (KIT – Germany) • Dr. Bambang Setiadi (Dewan Riset Nasional) • Himlal Baral, PhD (CIFOR, Nepal) Moderator : Prof. Sudharto P. Hadi, MES, PhD (UNDIP)
11.00 – 12.45	**Plenary Lecture & Discussion (2)** • Prof. Claudia Gallert (University of applied science – Emden/Leer – Germany) • Prof. Peter Gell (Federation University Australia) • Dr. Tri Retnaningsih Soeprobowati, MAppSc (UNDIP) Moderator : Dr. Hadiyanto, MSc (UNDIP)
12.45 – 13.45	Lunch

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Prevalence of Hookworm infection and Strongyloidiasis in Cats and Potential Risk Factor of Human Diseases

Blego Sedionoto[1,2,*], *Witthaya* Anamnart[1]

[1]Doctoral Program of Biomedical Sciences, School of Allied Health Sciences and Public Health, Walailak University, Thasala, Thailand
[2]Department of Environmental Health, Faculty of Public Health, Mulawarman University, Samarinda- Indonesia

Abstract. Hookworm infection and Stronyloidiasis are public health problem in the worldwide which both of them could infective in human by penetrated on skin and they have potential risk from Gastrointestinal zoonotic helminths of pets, including cats. We investigated the prevalence soil transmitted helminths infection in human and cats used modified Formal-Ether Concentration and agar plate culture. Fecal samples of 23 cats and human from Naitung and Subua Villages (area study 1), and fecal samples of 15 cats and 17 humans from Thasala Beach villages (area study 2) were collected. Result of study in area study 1 showed prevalence of infection in human was not hookworm and strongyloidiasis but 10% humans have infected Ascaris and Tricuris, and in cats have infected by hookworm 75.2% and S. strercoralis 8.5%, toxocara 13%, spirometra 13% and overall prevalence 82.5%. In area study 2 showed in human has infected by Trichuris 100% and S. stercoralis 29.4% and in cats have infected by hookworm 100% and S. strercoralis 40%, toxocora 20%, and spirometra 20%. Helminth infection found in both humans in two areas study are S. strercoralis. Hookworms were the most common helminth in cats but did not connection with infection in human, while S. strercoralis was helminth infection in cats which has potential zoonotic disease to human.

1 Introduction

Dogs and cats play a significant role as reservoir hosts for gastrointestinal zoonotic parasites including protozoa, trematode, cestode and nematode [1, 2, 3]. Humans can be infected via contact with a dog or cat or via contamination of infective stages in food or water [4, 5].

Worldwide, there is a significant variation in the prevalence of gastrointestinal zoonotic helminths in dogs and cats [6, 3]. High infection rates of zoonotic parasites including hookworms, *Trichuris spp., Spirometra spp., Taenia spp., Toxocara spp.* and *Opisthorchis spp.* have been reported [7,8,6,3]. Infection of zoonotic helminths has previously been researched in Thailand.

In the central area, a high prevalence of hookworm Ancylostoma ceylanicum was reported among dogs in temple communities in Bangkok [9]. The infections of zoonotic helminths, hookworms, *Trichuris spp., Toxocara spp.* and *Spirometra spp.* were found in dogs and cats in animal refuges [10].

In the Northeastern area, a high infection rate of liver fluke, Opisthorchis viverrini (O. viverrini) in dogs and cats, was found in communities where O. viverrini infection in human was high [3]. In Thailand, infections of hookworms and O. viverrini are the major public health problems [11, 12, 13, 14, 9]. Infections of zoonotic hookworms, A. ceylanicum and A. caninum, have been reported in many areas [13, 9]. Molecular analysis showed A. ceylanicum is prevalent in humans and dogs in the Central and the Northeastern areas of Thailand [13, 9].

Another STH, *Strongyloides stercoralis*, is often neglected in helminth surveys [15, 9], yet previous studies show high *S. stercoralis* infection rates in Cambodia [16]. School-aged children in the developing world are at highest risk of morbidity due to STHs and intestinal protozoan infections [17].

However, mass treatment only focuses on three major STHs (*Ascaris*/hookworm/*Trichuris*). Other nematodes like *S. stercoralis*, trematodes and protozoan infections are not addressed. In rural Southeast Asia,little is known about the zoonotic potential of IPIs in humans and animals. Therefore of domestic animals, such as cats, dogs and pigs, as contributors to human STHs and as reservoir hosts for zoonotic parasites remains unexplored and/or the data are inaccessible.

Although surveys of zoonotic gastrointestinal helminths in dogs and cats had been done in Thailand, most of the studies have focused on the Central or Northeastern region [18, 19, 10, 20]. This study to investigate prevalence of zoonotic helminth infection in cats that potential risk factors to human.

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Management to Insulate Ecosystem Services from the Effects of Catchment Development

Peter Gell[1,*]

[1]Wetlands Research Network, Federation University Australia, Mt Helen, Vic. – Australia

Abstract. Natural ecosystems provide amenity to human populations in the form of ecosystem services. These services are grouped into four broad categories: provisioning – food and water production; regulating – control of climate and disease; supporting – crop pollination; and cultural – spiritual and recreational benefits. Aquatic systems provide considerable service through the provision of potable water, fisheries and aquaculture production, nutrient mitigation and the psychological benefits that accrue from the aesthetic amenity provided from lakes, rivers and other wetlands. Further, littoral and riparian ecosystems, and aquifers, protect human communities from sea level encroachment, and tidal and river flooding. Catchment and water development provides critical resources for human consumption. Where these provisioning services are prioritized over others, the level and quality of production may be impacted. Further, the benefits from these provisioning services comes with the opportunity cost of diminishing regulating, supporting and cultural services. This imbalance flags concerns for humanity as it exceeds recognised safe operating spaces. These concepts are explored by reference to long term records of change in some of the world's largest river catchments and lessons are drawn that may enable other communities to consider the balance of ecosystems services in natural resource management.

1 Introduction

Human societies have reaped food, water and materials from river catchments. While climate variability at a range of time scales has mediated the supply of these resources at regional scales, the sedentarisation of human communities through the Holocene, and the attendant increases in population and technology, has increased the intensity of resource exploitation. The Millennium Ecosystem Assessment reveals the further amplification of impacts of human resource exploitation from the mid-20th century identifying the Great Acceleration, which has prompted calls for the demarcation of a new geological epoch, The Anthropocene [1,2].

While ethical arguments can be mounted that natural systems warrant conservation for intrinsic reasons, the Ecosystem Services they provide humans is increasingly being used to justify investment in wise management [3]. It is recognised that the demand for consumptive resources such as food, water, energy, timber and minerals for the construction of shelter and fibre for clothing is impacting negatively on the other services provided humanity by the natural environment. In market based economies there remain opportunities for the price of consumption to reflect merely the cost of production, with little requirement for it to reflect the trade-off in the loss of assets and services, that are valuable, but represent a challenge to quantify economically. Without full cost accounting of the trade-offs between services society risks undermining the support afforded by the less quantifiable phenomena and, ultimately, the ongoing supply of provisioning services.

The most readily identifiable services provided by natural ecosystems are usually those that provide directly for human needs. These Provisioning Services comprise potable water and food, including those harvested directly such as fish and native fruit, as well as those sown by people such as crops and stock raised for milk and meat. As a resource timber was used by early hominids as an energy source and then for shelter as technology became more sophisticated. Extracted minerals have replaced timber as a provider of shelter and this fibre is now directed in large volumes to the creation of paper. Most of humanity's energy is now provided by extracted fossil fuels that were largely unavailable before the industrial revolution.

The natural environment also affords considerable benefit to humanity by means that are not defined as provisioning. Natural systems regulate the habitat used by people by moderating microclimatic extremes (e.g. shade, shelter) and by controlling irruptions of pests, predators and disease carrying organisms that may impact negatively on people. It may also mitigate the risk of environmental hazards – coastal and riparian vegetation play's a clear role in protecting human settlements from floods and, as witnessed in 2004, tsunamis. Natural ecosystems also provide support to society that underpins the provision of food and water through the pollination of flowers that beget seed and fruit and the purification of water to mitigate the

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Hybrid Method for Mobile learning Cooperative: Study of Timor Leste

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[2]Department of Computer Science, Faculty of Engineering and Science, Dili Institute of Technology, Dili – Timor Leste

Abstract. In the modern world today the decision support system is very useful to help in solving a problem, so this study discusses the learning process of savings and loan cooperatives in Timor Leste. The purpose of the observation is that the people of Timor Leste are still in the process of learning the use DSS for good saving and loan cooperative process. Based on existing research on the Timor Leste community on credit cooperatives, a mobile application will be built that will help the cooperative learning process in East Timorese society. The methods used for decision making are AHP (Analytical Hierarchy Process) and SAW (simple additive Weighting) method to see the result of each criterion and the weight of the value. The result of this research is mobile leaning cooperative in decision support system by using SAW and AHP method. Originality Value: Changed the two methods of mobile application development using AHP and SAW methods to help the decision support system process of a savings and credit cooperative in Timor Leste.

1 Introduction

In today's modern world, cooperatives are well-known in various countries, with the aim of helping to process fast and good savings and loans. As we have seen, cooperatives are an organization that has a business owned and operated by a person for the sake of the common good. Seeing that the people of Timor Leste have not understood well the process of a cooperative system with good savings and loans, the community still lends money and interest with manual processes without good administrative processes [1].

Community activities in Timor Leste's country in credit unions were not well understood by the newly independent Timor-Leste state in 2002, and the lending process that existed to the community was still through a manual process, and without going through better processes, resulting in a lack of community understanding Timor Leste in the use of cooperatives. So in this study, the author uses the merger of two methods such as SAW and AHP in the calculation process to get a decision on who will get the loan in the cooperative and cooperative learning contained in the mobile application [2]. Already we know that credit cooperatives are non-bank groups in various developed countries and together with the fact that credit cooperatives are an important part of the financial system in Timor Leste [3].

Based on an analysis of the simplified savings and loan cooperative business activities in Timor Leste, this research is how to change the understanding of the people of Timor Leste in the learning process of financial cooperatives with a credit decision support system with the help of combining methods such as SAW and AHP to decide a person Can receive loans in the cooperative [4][5][6]. Movement of cooperative learning changes from applications that will be run from the merger methods SAW and AHP is one of the means for the community can be well understood process of learning good savings and loan cooperatives. In this study the author also uses decision support system to decide who will receive the loan.

The results of the decision of this WEB application will help the process of inputting data of new cooperative members, and the results of its decisions through mobile applications in which in the form of information transactions and cooperative learning. Learning is an aid provided by educators to occur the process of acquiring knowledge and knowledge and mastery of skills and the formation of attitudes and beliefs in learners. In other words learning aims to help learners to learn well. So cooperative learning with mobile is assisted by decision support system using SAW and AHP method [7]. To make the learning process of credit cooperatives in Timor Leste, the results of the application using decision support system with SAW and AHP method, then the results of the calculation of both methods are included in web and mobile applications for cooperative learning process.

2 Literature Review

Previously there have been several studies conducted and cannot be separated from the results of earlier research from the topic of research on credit cooperatives:

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The Role of Spatial Analysis in Detecting the Consequence of the Factory Sites : Case Study of Assalaya Factory- Sudan

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Abstract. Spatial analysis is considered as one of the most important science for identifying the most appropriate site for industrialization and also to alleviate the environmental ramifications caused by factories. This study aims at analyzing the Assalaya sugarcane factory site by the use of spatial analysis to determine whether it has ramification on the White Nile River. The methodology employed for this study is Global Position System (GPS) to identify the coordinate system of the study phenomena and other relative factors. The study will also make use Geographical Information System (GIS) to implement the spatial analysis. Satellite data (LandsatDem- Digital Elevation Model) will be considered for the study area and factory in identifying the consequences by analyzing the location of the factory through several features such as hydrological, contour line and geological analysis. Data analysis reveals that the factory site is inappropriate and according to observation on the ground it has consequences on the White Nile River. Based on the finding, the study recommended some suggestions to avoid the aftermath of any factory in general. We have to take advantage of this new technological method to aid in selecting most apt locations for industries that will create an ambient environment.

1 Introduction

The spatial analysis in this paper is emphasizes on the spatial elaboration for the factory site by several element using Global Position System (GPS) , Geographical Information System (GIS) and satellite data, making way for spatial interpretation of the factory potential zones. It has the ability to decide whether the factory location is suitable for the industrial process through special techniques. It will be elaborated in data analysis. It also has potential to find the affinity between Assalaya factory location and water resources–white Nile River and human settlement. The study will further illustrate the potential aftermath affected by the factory through analyzing the data by GIS technique, [1].
The GIS technique is considered as one of the important scientific technology that is recently in use as decision-maker for selecting compatible location for industries and has ability to predict the future ramification as well as the influence by the factories through special techniques because it can be one of the scientific technological
Innovation which has ability to put scientific research findings into practice,[2].

The use modern technology with different techniques like Spatial Analysis and Digital Elevation Model (DEM) is the best way of selecting the right position of factories to avoid consequences caused by the factory production which has massive impact on water resources. So if factories are well-sited will bring forth both economic and environmental benefit especially in recent case of rapid population growth,[3].

Digital Elevation Model (DEM) is suitable to exhibit the continuous change of the earth topography. It is the basic data source for terrain analysis and spatial applications. It can be used for studies that are related to science and engineering. The function of the DEM is supported by the widespread availability of digital topographic data,[4].

There are significant reasons for the selection of this topic and choosing Assalaya factory. In relation to the selection of this topic, it has been observed that factory wastewater is discharged into White Nile River. The White Nile River is considered the main branch of River Nile and the fundamental source of drinking water in Sudan in general. This being the specific area under study, there arise the need to emphasize on the role and ability of Spatial Analysis to select compatible location of factories to secure human life from the consequences from the factories and also to conserve the environment and the realization of the economic efficiency as well.

Assalaya Factory is being chosen for this study because the factory has been allocated in an environment that is inappropriate and complained by citizens that stay around this area, where some people have been suffering as a result of sugar cultivation production output. It has

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