

# Hedonic Property Value of Water Service in Tidal Lowland Agriculture

*by Muhammad Yazid*

---

**Submission date:** 29-May-2023 05:47PM (UTC+0700)

**Submission ID:** 2104499248

**File name:** Property\_Value\_of\_Water\_Service\_in\_Tidal\_Lowland\_Agriculture.pdf (528.2K)

**Word count:** 5510

**Character count:** 31298

# ICASEE 2013

## 2013 International Conference on Agriculture Science and Environment Engineering

December 19-20, 2013  
Beijing, China

*Edited by:*  
Fangli Zheng

**DEStech Publications**  
**2013.12**

# **1** Preface

We cordially invite you to attend 2013 International Conference Agriculture Science and Environment Engineering (ICASEE 2013), Beijing, China during December 19-20, 2013. The main objective of ICASEE 2013 is to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Agriculture Science, Environment Engineering and Engineering Technology. This conference provides opportunities for the delegates to exchange new ideas and experiences face to face, to establish business or research relations and to find global partners for future collaboration.

ICASEE 2013 received over 350 submissions which were all reviewed by at least two reviewers. As a result of our highly selective review process about 130 papers have been retained for inclusion in the ICASEE 2013 proceedings, less than 40% of the submitted papers. The program of ICASEE 2013 consists of invited sessions, and technical workshops and discussions covering a wide range of topics. This rich program provides all attendees with the opportunities to meet and interact with one another. We hope your experience is a fruitful and long lasting one. With your support and participation, the conference will continue its success for a long time.

The conference is supported by many universities and research institutes. Many professors play an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in the review process, and to the authors for contributing their research result to the conference. Special thanks go to our publisher DEStech Publications. At the same time, we also express our sincere thanks for the understanding and support of every author. Owing to time constraints, imperfection is inevitable, and any constructive criticism is welcome.

We hope you will have a technically rewarding experience, and use this occasion to meet old friends and make many new ones. Do not miss the opportunity to explore in Beijing, China. And do not forget to take a sample of the many and diverse attractions in the rest of the China.

We wish all attendees an enjoyable scientific gathering in Beijing, China. We look forward to seeing all of you next year at the conference.

The Conference Organizing Committees  
December 19-20, 2013  
Beijing, China

## Contents

<b>The Effect of Freezing on Onion Cell Structure</b>	<i>Xiaojing Zhou and Bin Liu</i>	<i>ICASEE131001</i>
<b>Synthesis and electrocatalytic performance of MWCNT-supported Cu@Pt core-shell nanoparticles for PEMFC</b>	<i>Shuping Yu, Qun Lou, Runtong Liu, Wensheng Yang, Kefei Han, Zhongming Wang, Hong Zhu</i>	<i>ICASEE131006</i>
<b>Experiment Study on Feeding Royal Chicken by Natural Mineral Feed</b>	<i>Wenfeng Lv, Qingshan Li, Jing Zhou, Dehai Zhou, Yanning Shan, Yang Yu</i>	<i>ICASEE131008</i>
<b>Extraction and Analysis of Polysaccharides from the Fruit of Capparis spionosa L.</b>	<i>Yu-Bin Ji and Chenfeng Ji</i>	<i>ICASEE131012</i>
<b>Sulfated modification and anti-tumor activity of laminarin</b>	<i>Chenfeng Ji, Yubin Ji</i>	<i>ICASEE131013</i>
<b>Coupling effects of water and fertilizer on growth and physiological characteristics of Chinese white poplar seedlings</b>	<i>Jing Qin, Wenyi Dong and Wei Lu</i>	<i>ICASEE131016</i>
<b>The Development Vein and Prospect of Ecological Civilization Research</b>	<i>Yunpu Chen, Shuxian Wu and Qi Jiang</i>	<i>ICASEE131019</i>
<b>Characterisation of carotenoid composition in Malaysian Tiger Shrimp (Penaeus monodon) waste</b>	<i>Shazana Azfar Radzali, Rashidi Othman and Noraini Mahmud</i>	<i>ICASEE131021</i>
<b>Research on the Relationship between Cyanobacteria-bloom and Lake Surface Temperature in Lake Taihu Using Time-series MODIS Data</b>	<i>Mengxiao Ma, Wenhua Xiang, Yuchao Zhang and Xin Qian</i>	<i>ICASEE131022</i>
<b>Sorption of Cu<sup>2+</sup> Ion from Aqueous Solutions by Phosphoric Acid Activated Poultry Manure Biochar</b>	<i>Minh-Viet Nguyen and Byeong-Kyu Lee</i>	<i>ICASEE131023</i>
<b>Effects of lipid levels on growth, selected liver biochemical parameters and histology of Blood Parrot</b>	<i>Pei Cui, Minxia Wei, Yan Gao, Dongqing Bai, Zhi-chao Jia, Bao-long Li, Hong-chao Liu, Wen-yan Mou, Feng-min Pan</i>	<i>ICASEE131024</i>
<b>Slope Risk Level Assessment Based on Erosion Induced Landslide: A Case Study in Malaysia</b>	<i>Ali, M.F, Mohd Sabri, M.S, Abd Makatar M. A</i>	<i>ICASEE131027</i>
<b>Mitigation of Disinfection By-Product Formation Whilst Incorporating the Bromide Ion</b>	<i>Brett Harper, Zoe J. Y. Zhu, E. McBean</i>	<i>ICASEE131039</i>
<b>Interleukin-1 Receptor-Associated Kinase-2 Genetic Variant Increases NF-<math>\kappa</math>B Activity induced by poly (I:C) and Influenza virus</b>	<i>Xin Li, Huiyun Wu, Shanshan Xiong, Zhisong Huang, Shuhai Huang, Siqing Zhao, Hua Wang, Zhenhai Sun, Xiegu Xu</i>	<i>ICASEE131040</i>
<b>Toward Rural Sewage Treatment in China</b>	<i>Ying Zhao, Xing Peng, Caole Li, Beidou Xi, Lieyu Zhang, Guowen Li</i>	<i>ICASEE132003</i>
<b>Research on Incentives for Enterprise Innovation in the Emerging Industry</b>	<i>Zhou Renzhong</i>	<i>ICASEE132004</i>

<b>A Case Study of the Energy-saving Mode of Happy Farmhouse Tourism in China--A Perspective of Sustainable Development</b>	<i>Zhizhang Wang,Chao-WANG,Ling Guo,Mengzhu Li</i>	ICASEE132005
<b>A study on the microaerobic removal of hydrogen sulphide in biogas</b>	<i>WU Meng-meng,HU Huan-jie,YU Gan,LIN Chun-mian</i>	ICASEE132013
<b>Nitrogen, phosphorus and COD losses from paddy fields under different water and fertilizer management regimes</b>	<i>Shizong ZHENG,Shujun ZHAO</i>	ICASEE132015
<b>DSC and XRD Analysis of (A384.1)(1-x)[(MgO)p]x Composites</b>	<i>Nrip jit, A K Tyagi</i>	ICASEE132016
<b>Morphological Responses of Seed Germination and Seedling Growth of Three Platycodon Grandiflorum Varieties to Temperature Stress</b>	<i>LIU Zi-gang,Shen Bing,ZHANG Yan</i>	ICASEE132022
<b>Gene divergence of interferon regulatory factor (IRF) 4, 8, 9 and 10 in teleost fish</b>	<i>Rui Tuo, Jing Wan, Qiao-Qing Xu</i>	ICASEE132023
<b>Soil Clustering Analysis for Soil Management in Pa Dend, the Adjacent Area of Kaeng Krachan Natural Park, Thailand</b>	<i>Saowanee Wijitkosum</i>	ICASEE132026
<b>Biochar Production for Soil Amendment at Huay Sai Royal Development Study Center and Pa-deng Biochar Research Center (PdBRC), Petchburi Province, Thailand</b>	<i>Thavivongse Sriburi</i>	ICASEE132027
<b>Geneome Arrangement Comparative of Interferon Regulatory Factors in Bony Fish</b>	<i>Jing Wan,Rui Tuo, Qiao-Qing Xu</i>	ICASEE132028
<b>Research on the Evaluation of Ecological Civilization Construction in Dian-zhong Urban Agglomeration</b>	<i>Huang Xiaoyuan,Zhao Hao,Guo Sizhe</i>	ICASEE132029
<b>Prepared of Sericite with Higher Diameter Thickness Ratio from Tailings of Gold-Antimony</b>	<i>Wang Quanliang,Feng Qiming</i>	ICASEE132031
<b>Experimental research of filling oxygen ability of ultramicro bubble generator</b>	<i>Wu zhiren,Peng Jiao,Jiang Dawei,Wu Chundu,Jiang Suying,Zhang Bo</i>	ICASEE132033
<b>Synthesis of Selenium-Codonopsis pilosula Polysaccharide and evaluation of Antioxidant Activity in vitro</b>	<i>Liming Jin,Miao Hao,Peng Cao,Lina Liu,Chunshan Quan,Shengdi Fan</i>	ICASEE132035
<b>Establishment and the early growth of a bio-energy plantation with fast-growing salix Integra Thrub. Trees in Zhejiang (China).</b>	<i>Honggang Sun</i>	ICASEE132036
<b>The elemental property of whole peptidoglycan extracted from Lactobacillus.paracasei subp. Paracasei X12</b>	<i>Shumei Wang,Lamwei Zhang,Chaohui Xue,Hongbo Li,Yuehua Jiao,Rongbo Fan,Shuang Zhang,Xue Luo,Wenli Liu</i>	ICASEE132037
<b>Planning Staff as an Actor of Geographic Information Systems (GIS) Translation in the Planning Departments of the Kuala Lumpur City Hall, Malaysia</b>	<i>MOHD RAMZI Mohd Hussain,FOZIAH Johar,IZAWATI Tukiman,RASHIDI Othman</i>	ICASEE132041
<b>Studies on the Floral and Pollen Morphology of Agastache rugosa</b>	<i>Chungong Li,Yougen Wu,Xianchao Li,Qixuan Meng</i>	ICASEE132042

<b>Isolation and Identification of Autotoxic Compounds from Rhizosphere Soil of Pogostemon cablin</b>	<i>Xianchao Li, Yougen Wu, Junfeng Zhang, Dongmei Yang, Xinwen Hu</i>	ICASEE132044
<b>Adsorptive Removal of Cd(ii) from Aqueous Solution Using Pine Cone and h2so4 Modified Pine Cone</b>	<i>Pham - Thi Huong, Byeong - Kyu Lee</i>	ICASEE132045
<b>An Simulation of Farm Tractor Reliability with Different Distribution Assumption.</b>	<i>Hongjie Duan, Xiuchun Zhang, Jianping Yin, Linbin Zhao, Lijun Wang</i>	ICASEE132046
<b>Preparation of Compound Copper Amino Acid Chelate from Concentrated Monosodium Glutamate Wastewater</b>	<i>Shan-ping Li, Jie Xu, Xiao-hong Cao, Yan-wen Dong, Xiang-ru Ma</i>	ICASEE132048
<b>Solar Optimisation Based on Different Tracking Techniques</b>	<i>Emmanuel B. Balogun, Xu Huang, Dat Tran</i>	ICASEE132049
<b>Bioaugmentation of Leachate Polluted Soil for Optimal Removal of Heavy Metals</b>	<i>Emenike, C. U., Agamuthu, P., Fauziah, S.H.</i>	ICASEE132050
<b>The correlation of fat acidity, antioxidant activity and phenolic compounds of brown rice following storage</b>	<i>Zhongkai Zhou, Yan zhang, Xiaoshan Chen, Paiyun Zheng, Yan Yang</i>	ICASEE132051
<b>Hedonic Property Value of Water Service in Tidal Lowland Agriculture.</b>	<i>Muhammad Yazid</i>	ICASEE132052
<b>Calcium-fortified Pineapple Juice for Prevention of Osteoporosis</b>	<i>Nura Malahayati, Merynda Indriyani Syafutri</i>	ICASEE132053
<b>Relationships between Aggregate Stability and Selected Soil Properties in Taleghan Watershed of Iran</b>	<i>Mohsen Armin, Xinhua Peng, Fatemeh Barzegari</i>	ICASEE132055
<b>The Extraction and Determination of Taurine in Scallop Viscera by Spectrophotometry</b>	<i>LI Ting, XING Rong-e, LIU Song, YU Huahua, LI Pengcheng</i>	ICASEE132057
<b>Effects of Polygonum Cuspidatum on Antioxidant and Selected Blood Indexes of Blood Parrot</b>	<i>Shiyu Jin, Jian Li, Pei Cui, Shi Chen, Qiang Xu, Qiang Liu, Ze Fan</i>	ICASEE132058
<b>Suspended sediment prediction by time Seri models and Artificial Neural Networks (Case study: Ghazaghly station in Gorganrood river of Iran)</b>	<i>Fatemeh Barzegari, Mohsen Armin</i>	ICASEE132060
<b>The Set Pair Analysis and Its Application on the Correlation among Many Factors</b>	<i>Cao Lian-hai, Liu Fenglin, Lin Yibin</i>	ICASEE132062
<b>LCA Adapted Approach for Soybean Biodiesel Production from an Integrated Crop-Livestock System in Midwestern Brazil</b>	<i>Elisa M. M. Esteves, Davi J. Bungenstab, Artur H. L. Falcette, Cláudia V. R. Morgado</i>	ICASEE132065
<b>Ecotrophic Efficiency Comparison of Three Culture Modes of Grass Carp Based on the Analyses of Ecopath with Ecosism</b>	<i>Wei-Yang Bao, Mei-Yuan Yang, Xin-Tian Liu, Hong-Wei Shan, Fang Wang</i>	ICASEE132067
<b>Gasification of Torrefied Biomass in a Bubbling Fluidized Bed Gasifier</b>	<i>Kanit Manatura, Hung-Te Hsu, Keng-Tung Wu, Kai-Cheng Yang, Jau-Huai Lu</i>	ICASEE132068
<b>The Importance and Involvement of Landscape Architecture in the Green Building Index (GBI)</b>	<i>MOHD RAMZI Mohd Hussain, NORHANIS DIYANA Nizarudin, IZAWATI Tukiman</i>	ICASEE132070

<b>Practice</b>		
<b>Sludge Compost Applied to Agricultural Soil: Effects on Growth of Wheat and Environmental Risk of Heavy Metals</b>	<i>Huanjia Liu, Jihong Zhao, Hongzhong Zhang, Jing Huo, Yixiao Yang</i>	<i>ICASEE132071</i>
<b>A Research on Characteristics of Solar Drying System for Agricultural Products</b>	<i>Leng Congbin, Ji Xu, Li Ming, Luo Xi, Wang Yunfeng, Tan Lijun</i>	<i>ICASEE132078</i>
<b>Correlation between Activated Sludge and Methane Production of Eupatorium Adenophorum Spreng Anaerobic</b>	<i>Fang Yin, Qiumin Li, Bin Yang, Xiaolong Cui, Wudi Zhang</i>	<i>ICASEE132079</i>
<b>Domestic and International Low-Carbon Development Strategies and Responses to Global Climate Change</b>	<i>Bo Wang, Qin Li, Hua Wang</i>	<i>ICASEE132080</i>
<b>The Economic Benefits of Water Absorbing Polymers: A Case Study of Drought Conqueror</b>	<i>Lizhong Zhang, Jiang Zhang</i>	<i>ICASEE132087</i>
<b>Recycling and fertilizer use reduction for clearing agricultural nitrogen of China</b>	<i>Siye Li, Richard T. Bush</i>	<i>ICASEE132091</i>
<b>The Comparison Research on the transformation efficiency of Regional Agriculture Science and Technology Achievements-- Based on the Model of DEA-TOPSIS</b>	<i>Xin Kang</i>	<i>ICASEE132092</i>
<b>Effects of Neodymium on Extracellular Polymeric Substances Secreted by Aerobic Granular Sludge</b>	<i>Shanping Li, Yanwen Dong, Yanyan Li, Jie Xu, Xiaohong Cao, Jun Wang</i>	<i>ICASEE132093</i>
<b>Relationship between Protease Activity and Biogas Rate during Anaerobic Digestion of Organic Fraction of Municipal Solid Waste</b>	<i>Jianchang Li, Yage Yuan, Qiang Wan, Rui Xu, Juan He</i>	<i>ICASEE132096</i>
<b>A Research on Expanding Water Carrying Capacity of Karez in Extreme Arid Areas of Turpan Basin Based on Statistic Method</b>	<i>Zulati Litifu</i>	<i>ICASEE132097</i>
<b>Emergy Analysis of Agricultural Eco-economic System Before and After Grain for Green in the Northwest of China</b>	<i>He Ling Wang, Jun Yi Niu, Run Yuan Wang, Wen De Huang, Guo Chang Li</i>	<i>ICASEE132098</i>
<b>A Control Strategy for Smooth Switching of Microgrid Operation Modes</b>	<i>Hongwei Li, Zhuangzhuang Zheng, Zhenning Zi, Yinghui Han, Mingchao Xia</i>	<i>ICASEE132100</i>
<b>Research on Service Restoration for Distribution Network containing Distributed Generations</b>	<i>Hongwei Li, Yanjie Zhang, Weihua Ye, Xiaoyu Hong, Mingchao Xia</i>	<i>ICASEE132101</i>
<b>Prediction of the New Rural Construction Demands for the Agricultural College Services Based on BP Artificial Neural Network.</b>	<i>Hongyan Sun, Xinying Zhang, Xiangyu Guo</i>	<i>ICASEE132102</i>
<b>Biological Purification Efficiency in Long-Distance Raw Water Distribution System</b>	<i>Da Zhang, Yanling Yang, Xing Li, Kun Xiang, Yangyang Liu</i>	<i>ICASEE132105</i>
<b>Property of Electroplating Ni-Fe Alloy for Membranes</b>	<i>Xiaohong ZHU, Xiaohu ZHENG</i>	<i>ICASEE132107</i>

<b>Detecting Water, Light and Temperature Responses in Leaf Activity Using Dynamic Laser Speckle Analysis</b>	<i>Xu Zhong, Xue-zhi Wang, Nicola Cooley, Peter Farrell, Bill Moran</i>	ICASEE132109
<b>Effect of Roasting on Anti-Inflammatory Activity of Oriental Melon (Cucumis melo l. Var. Makuwa) Seeds</b>	<i>Lei Chen, Young-Hwa Kang</i>	ICASEE132112
<b>Study on Biological Control of the Probiotic Bacillus Coagulans CGMCC 6681</b>	<i>Yan Liu, Yonghong Hu, Xiang Liu, Mengmeng Liang, Wenbiao Zhi, Wenge Yang</i>	ICASEE132113
<b>Effect of Water Stress on Physiological Ecological Characteristics, Photosynthetic Rate and Yield of Cotton</b>	<i>Zhi-yun Chang, Wei-jia CUI, Hao WU</i>	ICASEE132115
<b>Optimization of Irrigation Scheduling using Genetic Algorithms and AquaCrop: A Case study for Cotton in Northern Greece</b>	<i>Raphael Linker, Georgios Sylaios, Ilya Iostlovich</i>	ICASEE132117
<b>Investigation and Analysis on Rural Residential Energy-Saving Transformation in Northern China —Taking Balin Zuoqi for Example</b>	<i>Yong Yang, Chenxia Suo, Wei Deng Solvang, Hao Yu, Souzhen Zeng</i>	ICASEE132118
<b>Litter Production in both Natural and Degraded Mangrove Forest of Peninsular Malaysia</b>	<i>Hemati Zhila, Mahmood Hossain, Rozainah, M. Z.</i>	ICASEE132119
<b>Abundance and Deficiency Diagnosis of Nitrogen Nutrition Level of Lettuce Leaves at Tillering stage Based on Digital Color Images</b>	<i>Jun Sun, Aiguo Wei, Xiaming Jin, Liping Wang, Kai Tang, Caihui Song</i>	ICASEE132120
<b>Research on Intelligent Judgment of Water Deficiency of Tomato Based on SVM Algorithm</b>	<i>Xiaming Jin, Jun Sun, Guokun Zhang, Hanping Mao, Meng Cao, Feilong Song</i>	ICASEE132121
<b>Effect of Linseed Oil Supplementation on Performance, Carcass Quality and Fatty Acid Profile of Crossbred Wagyu Beef Steers</b>	<i>Wisitiporn Suksombat, Chayapol Meeprom, Rattakorn Mirattanaphrai</i>	ICASEE132122
<b>Effect of Linseed Oil Supplementation on Performance, Carcass Quality and Fatty Acid Profile of Crossbred Beef Steers</b>	<i>Pitunart Noosen, Pipat Lounglawan, Wisitiporn Suksombat</i>	ICASEE132126
<b>Effects of Oleic Acid Enriched Oils Supplementation on Performance and Carcass Quality of Crossbred Brahman Steers</b>	<i>Chayapol Meeprom, Wisitiporn Suksombat</i>	ICASEE132127
<b>The Place of Agriculture in Economic Growth</b>	<i>Gavril Stefan, Oana Coca</i>	ICASEE132129
<b>Effect of Tidal Operation on Pilot Scale Horizontal Subsurface Flow Constructed Wetland for the Treatment Groundwater Contaminated by Monochlorobenzene</b>	<i>Zhongbing Chen, Peter Kuschk</i>	ICASEE132131
<b>Study on the Maturity Modeling of Seed Industry Systems</b>	<i>Shuang Song, Liming Chen, Fengjun Lu, Qing Liu</i>	ICASEE132132
<b>Biofloc Technique, Applicable to Zero-Water Exchange and Intensive Culture Systems for the Shrimp Litopenaeus Vannamei</b>	<i>Hong-Wei Shan, Bo-Yang Chen, Ming-Jie Chen, Wei Hu, Qi-Rong Mo, Wei-Yang Bao</i>	ICASEE132135



<b>Productive Performance and Egg Quality of Laying Hens Kept under Different Rearing Systems</b>	<i>B. Thukhanon, S. Pitagwong, S. Khempaka, W. Molee</i>	ICASEE132136
<b>Agricultural Intelligent Greenhouse Management System Based on Z-Wave Wireless Sensor Network</b>	<i>Ying He</i>	ICASEE132138
<b>A Retrospect and Prospect on Researches of Light Pollution</b>	<i>Chengkang Gao, Wei Qin, Yanyu Wu, Xiaochun Peng, Hanmei Tang</i>	ICASEE132140
<b>Effects of Transglutaminase on the Properties of Rice Gel</b>	<i>Lu Zhang, Siming Zhao, Hongying Du, Shilong Chen, Zhihao Zhong, Dan Jia, Shanbai Xiong</i>	ICASEE132141
<b>The Effect of N+ Ion Implantation Mutagenesis on the Streptomyces Aureochromogenes NJYHWG 66382</b>	<i>Zheng Cao, Yonghong Hu, Jiaojiao Li, Yumei Kai, Wenge Yang</i>	ICASEE132142
<b>Use Technological Innovation to Promote the Interactive Development of Industrialization, Urbanization and Agricultural Modernization</b>	<i>Junjie Cao, Qiong Song, Dan Yang, Wei Cao</i>	ICASEE132143
<b>Content Determination of Total Saponins from Opuntia</b>	<i>Benyong Han, Rongqun Deng, Chaoyin Chen</i>	ICASEE132144
<b>The Study of Using both Ultrasonic Method and Fluid Shear Method to Disrupt Sludge</b>	<i>You Mei-yan, Shen Yang, Xu Chang-si, Lv Li-ting, Li Xian-jin, Xie Yuan-hua, Han Jin, Zhu Tong</i>	ICASEE132147
<b>An Assessment of Farmers' Response to Price Factor: Evidence From Sierra Leone Rice Cultivation</b>	<i>Alhaji M. H Conteh, Xiangbin Yan</i>	ICASEE132149
<b>Farmers' Awareness of Modern Rice Cultivars in African Environment — Evidence from Northern Sierra Leone</b>	<i>Alhaji M. H Conteh, Xiangbin Yan</i>	ICASEE132150
<b>GIS Analysis of Pedological Data and Measures for Improvement and Protection of Soils</b>	<i>Oncia Silveira, Copacean Loredana, Herbei Mihai</i>	ICASEE132151
<b>The Response of Hot Pepper (<i>Capsicum annuum</i> L.) in Water Use Efficiency and Soil Environments to Mulching Practices under Greenhouse</b>	<i>YL Liang, L Mu, CW Zhang, KF Wang</i>	ICASEE132152
<b>Management of <i>Rotylenchulus Reniformis</i> and Beneficial Nematodes with Sunn Hemp</b>	<i>Patricia V. Fewkes, Sharadchandra P. Marahatta</i>	ICASEE132154
<b>Integration of <i>Psidium Cattleianum</i> Leaf and Aqueous Leaf Extract Into Soil for Broadleaf and Grassy Weed Management</b>	<i>Jin-Wah Lau, Sharadchandra P. Marahatta</i>	ICASEE132155
<b>Mathematical Models for Predicting the Growth Trend of Microbial in Bioleaching</b>	<i>Yihong Xia, Zhanxue Sun, Wen Zhang</i>	ICASEE132156
<b>Preparation of Granular Media by Using Construction Wastes and Their Performance on Hospital Wastewater Treatment by Biological Aerated Filter (BAF)</b>	<i>Shanping Li, Xiaolong Ma, Xiaohong Cao, Yanyan Jiang</i>	ICASEE132518
<b>Analytical Solution to Steady-State Temperature Field of Asymmetric Frozen Soil Wall by Single-Row-Pipe Freezing</b>	<i>Xiang-dong HU, Yan-guang HAN</i>	APEM1018

## Cover page

Title: *Hedonic Property Value of Water Service in Tidal Lowland Agriculture*

Author: Muhammad Yazid

PAPER DEADLINE: **November 20, 2013**

PAPER LENGTH: **10 Pages**

SEND PAPER TO: **Muhammad Yazid, Ph.D.**  
**Department of Agribusiness**  
**Sriwijaya University**  
**Indralaya, South Sumatra 30662**  
**Indonesia**

**Tel: +62 711 580662**  
**Fax: +62 711 580276**  
**E-mail: yazid\_ppmal@yahoo.com**

## ABSTRACT

Despite its important role in agricultural water management in tidal lowlands, water service has not yet been considered as an input in crop production. The cost of water service is still born to the government budget such that budget cut will consequently results in abandoning of operation and maintenance of water infrastructures. This paper examines whether water service is a determinant of tidal farmland value. A survey involving 500 farmers was conducted in Telang, a rice production center in tidal lowland area of South Sumatra Province, Indonesia. Hedonic Property Value analysis was employed to provide answer to this examination. Analysis revealed that the value of tidal farmland with water service was significantly higher than that without water service. The value of tidal farmland was determined by soil fertility, distance to the local markets, the availability of water service, and farmland productivity. Being one of the significant determinants of tidal farmland value, imposing fee upon water service will expectedly be followed by farmers' willingness to pay for the fee.

Keywords: water service, tidal lowland, agriculture.

## INTRODUCTION

Water charging as a policy issue has been adopted in Indonesia through the issuance of The Water Resource Law in 2004 (UU No. 7/2004). However, the term water charging is only implicitly stated in a phrase of "financial responsibility". Farmers (water users) financial responsibility according to the law includes construction, operation and maintenance of water infrastructures at tertiary level. These responsibilities in practice are shared among farmers within a tertiary block, which include routine gate operation (opening or closing of gates according to crop water needs) and tertiary canal and gates maintenance.

Water charging policy has not yet been implemented in tidal lowland irrigation eventhough it has been mandated in the Water Resource Law. Instead of charging, a payment is applied to water user for its membership in water user association (WUA), not for the water used for cultivation. Water charge remains unknown and un

---

Muhammad Yazid, Ph.D., Department of Agribusiness, Faculty of Agriculture, Sriwijaya University, Jl. Palembang-Prabumulih KM32, Indralaya, Sumatera Selatan 30662, Indonesia.

acceptable to water users. Therefore, water service fee is considered more appropriate term to emphasize that the charge is not for the water itself, but for the service of delivering water down to the tertiary canals to fulfill crop water needs..

In tidal lowland area of Telang, one tertiary canal serves 16 ha farmland, 8 ha at each side. Two tertiary gates are installed, one at each end of the tertiary canal. Normally, these 16 ha farmland is owned by 8 farmers or 2 ha farmland in the average. Since water management actions directly affect the 16 ha farmland, the operation and maintenance of tertiary water infrastructures are collectively planned and implemented by the farmers, following the planned cropping patterns in the area.

The existence of water service and proper operation and maintenance of water infrastructures contribute to the farm output as well as the value of farmland. The value of farmland is also determined by farmland characteristics [1] such as fertility, relative distance <sup>4</sup> the market [2], and the existence of facilities to support cultivation [3]. Therefore, the objective of this study was to determine the value of water service and physical, spatial, and economic characteristics of tidal farmland. It was expected that the value of water service could be considered as basis for imposing water service fee for which water users (farmers) were financially responsible.

## METHODS

Hedonic pricing (HP) and travel cost method (TCM) are two most commonly used of revealed preference methods. Both TCM and HP have advantages of observing actual behavior. While TCM has particularly been used in estimating non-market value of ecotourism and recreational sites [4], HP was frequently employed in valuing property with regard to the environmental characteristics and changes. It particularly extracts effect of environmental factors on price of goods that include those factors [5] [6] [7]. The hedonic property method has been used to value characteristics <sup>3</sup> of goods that are not formally traded in the market [8]. This method has also been used to estimate the value of open space proximity [9], the improvement in air and water quality [10] and the evaluation of scenic views [11].

In water management research, hedonic method has been used in various studies with regard to water resource as a single resource or water in attachment to land resources. Hedonic method <sup>3</sup> has been used to estimate the minimum payment an owner (of water right) would be willing to accept for the sale or lease of a water right in Douglas County, Oregon, USA [12]. Using the hedonic method, this study has successfully put a monetary value on irrigation water (\$261 per acre-foot irrigation water) which is consistent with other studies and actual transaction in the study area. Similar to irrigation water, water service can be considered as an attribute of agricultural farmland which benefit can be valued similarly. Therefore, HP was considered appropriate in this study to value water service as an environmental characteristic that determine the price of tidal farmland as a property.

Hedonic property value of farmland is referred to as the market price of farmland. Its value has been studied based on several characteristics, including soil fertility [1], productivity and spatial aspects [2], and availability of water service [3]. In this study, the value of water service reflects the marginal willingness to pay for discrete change in water service, which is the change from without water service to with water service. Assuming two pieces of farmland that are identical except that one is with

water service and the other is without, the difference in market price between the farmlands is attributed to the value of water service for which the farmers are willing to pay.

In this research, the hedonic function for tidal farmland market price was stated as follow:

$$P_i = f(Q_S, Q_P, Q_{WS}) \quad (1)$$

where  $P_i$  = market price of tidal farmland

$Q_S$  = the vector representing farmland quality

$Q_P$  = the vector representing proximity of the farmland

$Q_{WS}$  = the vector representing facility on the farmland

The quality of tidal farmland was measured in three indicator variables, namely farmland fertility, productivity, and income obtained from crop production. The proximity of the farmland was defined and measured as the distance of the farmland from the local market. The facility on the farmland was represented by the availability of water service on the farmland and the maintenance of gates and canal connected to the farmland.

Based on the above description, the following regression equation was proposed in order to estimate the function:

$$P_i = \beta_0 + \beta_1 FERT + \beta_2 PRO + \beta_3 INC + \beta_4 DIST + \beta_5 D_{WS} + \beta_6 MAINT \quad (2)$$

where  $P_i$  = the market price of tidal farmland per hectare

$FERT$  = fertility level of farmland

$PRO$  = farmland productivity

$INC$  = income from crop production

$DIST$  = distance of farmland to the local market

$D_{WS}$  = dummy variables water service

$MAINT$  = canal and gates maintenance

The above regression equation was predicted using ordinary least square (OLS) method to yield the predicted market price of farmland based on its affecting factors. Subsequently, some statistics were employed to examine the goodness-of-fit of the overall model and the significance of each of the affecting factors. In addition, interpretations on the significant factors were made in term of direction and magnitude of their effects on the market price of tidal farmland [13]. Supposed, the model contained only the intercept and the dummy variable water service, the interpretation was as the following [14]:

$$P_i = \beta_0 + \beta_1 D_{WS} + \varepsilon_i \quad (3)$$

where  $D_{WS} = 1$  for farm with water service and 0 otherwise

The market price of farmland without water service was estimated as:

$$E(P_i | D_{WS} = 0) = \beta_0 \quad (4)$$

The market price of farmland with water service was estimated as:

$$E(P_i | D_{WS} = 1) = \beta_0 + \beta_1 \quad (5)$$

Therefore, the intercept  $\beta_0$  was the mean estimated market price of farmland and the slope coefficient ( $\beta_1$ ) was the difference in mean estimated market price between farm<sup>2</sup>nd with water service and without.

This study was designed as a survey, conducted in the deltaic area of Telang, South Sumatra, Indonesia. Telang, a reclaimed tidal lowland area for agriculture, is located in the lower reaches of Musi River. Research sample of 500 farmers were drawn using random sampling from<sup>2</sup> some 10,000 farmers, covering 12 secondary blocks (approximately 3,072 ha). Data were collected through field observation and structured interview with the sampled farmers.

## RESULTS AND DISCUSSION

As discussed in the methods, tidal farmland value is determined by soil fertility, productivity, income obtained from farming, distance of the farmland from the local market, the availability of water service, and the maintenance of gates and canal connected to the farmland. The mean value of farmland as measured in farmland market price is US\$5,261.07 ( $\pm$  1,018.82). The farmland market price varies from as low as US\$2,500.00 to as high as US\$10,000.00 per ha. The mean market price of farmland with water service is US\$5,612.36 per ha, whereas without water service is US\$4,807.51 per ha. The mean market price of farmland with water service is significantly higher than that without water service ( $t=9.399$ , sig.  $t=0.000$ ).

Table 1 presents the regression coefficients with the t statistics and significant level of each of the independent variables assumed to determine the farmland market price. Out of 6 independent variables assumed to have an effect on the farmland market price, only one variable that is significant at 90 percent confidence interval, which is farmland fertility. Others are proved to have statistically significant effect on the farmland market price at 99 percent confidence interval, which are: (1) productivity; (2) income; (3) distance of farmland from the local market, (4) the availability of water service, and (5) maintenance of canal and gate connected to the farmland. In Table 1 both direction and magnitude of the effect of these independent variables on the dependent variable are shown. The statistical tests of the regression indicate that the overall model is statistically significant. However, the variation in farmland market price explained by its determinants is approximately 26 percent. There is no collinearity detected in this analysis.

TABLE I. REGRESSION COEFFICIENTS AND THE VALUE OF STATISTICS

Variables	B	Std. Error	t	Sig.
(Constant)	33132758.632	3997802.536	8.288	.000
Fertility	2500777.738	1309442.781	1.910	.057*
Productivity (tons/ha)	1531738.264	497256.682	3.080	.002***
Income (Rp10 <sup>6</sup> )	178810.108	57019.518	3.136	.002***
Distance from the market	-1909067.120	358702.668	-5.322	.000***
Water Service (Dummy)	4058815.800	1256751.765	3.230	.001***
Canal & gate maintenance	3671982.726	1250081.538	2.937	.003***

\*Significant at 10%; \*\*Significant at 5%; \*\*\*Significant at 1%

Farmland fertility is a statistically significance determinant of farmland price ( $p=0.057$ ). Its coefficient indicates that farmland fertility is positively related to its market price as expected. Fertility is an important attribute of farmland. Farmland fertility is a result of interaction between physical conditions of the farmland and its accessibility to water infrastructures. The higher the fertility the higher the farmland price would be. Measured in ordinal level, one level increase in fertility would increase its price by about US\$250.08.

Productivity which is measured by the yield (tons of rice) per hectare farmland has a positive coefficient as hypothesized. Its effect on the farmland market price is significant. Its coefficient tells that every ton increase in productivity will be followed by an increase in the farmland market price of about US\$153.17. Productivity remains an important target in tidal lowland agriculture, especially rice production. With current productivity level of about 5.35 tons per hectare, it can potentially be increased to 10 tons per hectare as has been achieved by few farmers in the study area. Higher productivity will consequently result in higher farmland market price of the farmland.

Income from farming contributes significantly to the price of the farmland. Its coefficient indicates that every million Rupiah increase in total income will be followed by an increase of farmland market price of US\$17.88. While farmland productivity seems to directly affect the farmland market price, income affects the farmland market price indirectly through the perception regarding the value of property. Farmers with higher farm income tend to perceive higher value of their property than those with lower income.

The distance of farmland from the local market has a negative sign for its coefficient as expected. This indicates that the further the farmland from the local market, the lower the price of the farmland. For every km increase in the distance of the farmland from the local market, the price of the farmland decreases by US\$190.00.

Maintenance of canals and gates as hypothesized has also a positive effect on the market price of the farmland. This variable was measured as a dummy variable which was coded 1 for maintained canals and gates, 0 otherwise. Farmland with maintained canals and gates connected to it has higher market price than that without canals and gates maintenance. Farmland which is connected to the maintained canals and gates has market price which is US\$367.20 higher than that which is connected to un-maintained canals and gates. Maintained canals and gates enables farmers to properly irrigate, retain and drainage water from the field according to crop water needs. This condition would ensure the optimum crop growth and maximum yield obtained from the farmland.

The availability of water service significantly affects the market price of farmland. The positive value of its coefficient indicates that farmland with water service has higher price than that without water service. The difference in mean estimated market price between farmland with and without water service is indicated by the value of its coefficient ( $\beta_1$ ). This means that the price of farmland with water service is US\$405.88 higher than that without water service. This result is in accordance with the hypothesized relationship between the availability of water service with the market price of farmland, proving that water service is an important attribute of tidal farmland.

## CONCLUSION

The result of hedonic property analysis indicates that, as a property, the mean price of farmland with water service is significantly higher than that without water service. The value of farmland is significantly affected by the availability of water service beside other characteristics of the farmland (farmland fertility, productivity, distance from the local market, and infrastructure maintenance) and farmer's income. The availability of water service accounts for approximately one half of the difference in the farmland price. Based on the findings of this study, the value of water service can be considered as basis for imposing water service fee for which farmers are financially responsible to contribute in the operation and maintenance of tidal water infrastructures at tertiary level.

## REFERENCES

1. Miranowski, J. A. and Hammes, B. D. Implicit prices of soil characteristics for farmland in Iowa. *American Journal of Agricultural Economics*. 1984; 66: 745-749.
2. Boisvert, R. N., Schmit, T. M. and Regmi, A. Spatial, productivity, and environmental determinants of farmland values. *American Journal of Agricultural Economics*. 1997; 79: 1657-1664.
3. Palmquist, R. B. and Danielson, L. E. A hedonic study of the effects of erosion control and drainage on farmland values. *American Journal of Agricultural Economics* 1989; 71: 55-62.
4. Hanley, N. Cost-benefit analysis and environmental policy making. *Environmental and Planning*. 2001; 19: 103-118.
5. Pagiola, S., von Ritter, K. and Bishop, J. Assessing the economic value of ecosystem conservation. The World Bank Environment Department, Washington, D.C. 2004.
6. Powe, N. A., Garrod, G. D. and Willis, K. G. Valuation of urban amenities using a hedonic price model. *Journal of Property Research*. 1995; 12: 137-147.
7. Garrod, G. and Willis, K. The environmental economic impact of woodland: a two-stage hedonic price model of the amenity value of forestry in Britain. *Applied Economics*. 1992; 24: 715-728.
8. Freeman, M.A. III. *The Measurement of environmental and resource values: theory and methods*. Resources for the Future, Washington, D.C. 2003.
9. Lutzenhiser, M. and Netusil, N.R. The effect of open spaces on a home's sale price. *Contemporary Economic Policy*. 2001; 19: 291-98.
10. Chattopadhyay, S. Estimating the demand for air quality: new evidence based on the Chicago Housing Market. *Land Economics*. 1999; 75:22-38.
11. Kulshreshtha, S.N. and Gillies, J.A. Economic evaluation of aesthetic amenities: a case study of River View. *Water Resources Bulletin* 1993; 29: 257-66.
12. Butsic, V. and Netusil, N. R. Valuing water rights in Douglas County, Oregon using the hedonic price method. *Journal of the American Water Resources Association (JAWRA)*. 2007; 43:622-629.
13. Hair, J. F., Black, W. C., Babin, B. J. and Anderson, R. E. *Multivariate data analysis a global perspective*. Pearson Education, Inc., Upper Saddle River, New Jersey. 2008.
14. Gujarati, D. N. *Basic econometrics*. 4<sup>th</sup> ed. McGraw-Hill/Irwin, New York. 2003.



# Hedonic Property Value of Water Service in Tidal Lowland Agriculture

---

## ORIGINALITY REPORT

---

11%	%	11%	%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

---

## PRIMARY SOURCES

---

- 1** Zheng, . "Front Matter", Future Communication Information and Computer Science, 2015. 7%  
Publication
- 2** Muhammad Yazid, Mad Nasir Shamsudin, Khalid Abdul Rahim, Alias Radam, Azizi Muda. "The achievement of water management objectives based on willingness to pay for a water service fee in tidal lowlands", Aquatic Ecosystem Health & Management, 2013 2%  
Publication
- 3** Van Butsic, Noelwah R. Netusil. "Valuing Water Rights in Douglas County, Oregon, Using the Hedonic Price Method", Journal of the American Water Resources Association, 2007 1%  
Publication
- 4** Wisitiporn Suksombat, Chayapol Meeprom, Rattakorn Mirattanaphrai. "Performance, Carcass Quality and Fatty Acid Profile of 1%

# Crossbred Wagyu Beef Steers Receiving Palm and/or Linseed Oil", Asian-Australasian Journal of Animal Sciences, 2016

Publication

---

---

Exclude quotes      On

Exclude matches      < 1%

Exclude bibliography      On