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

Judul Jurnal Ilmiah (Artikel)	:	Optimal Adaptive Neuro-Fuzzy Inference System Architecture for Time Series Forecasting with Calendar Effect
Nama/ Jumlah Penulis	:	Putriaji Hendikawati, Subanar, Abdurakhman, Tarno
Status Pengusul	:	penulis ke-4
Identitas Jurnal Ilmiah	:	a. Nama Jurnal : Sains Malaysiana b. Nomor ISSN : 0126-6309 c. Vol, No., Bln Thn : Vol. 51 Issue.3 (2022): 895-909 d. Penerbit : Universiti Kebangsaan Malaysia e. DOI artikel (jika ada) : http://doi.org/10.17576/jsm-2022-5103-23 f. Alamat web penerbit : https://www.ukm.my/jsm/pdf_files/SM-PDF-51-3-2022/23.pdf g. Terindex : Scopus, Q2, SJR = 0.26

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			Jurnal Ilmiah Internasional Terindek Basis Data
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Prof. Dr. Widowati, S.Si., M.Si
NIP. 196902141994032002
Unit Kerja: FSM UNDIP
Bidang Ilmu: Matematika

Reviewer 2

Nama : Prof. Dr. Sunarsih, M.Si
NIP. 195809011986032002
Unit Kerja : FSM Undip
Bidang Ilmu: Matematika

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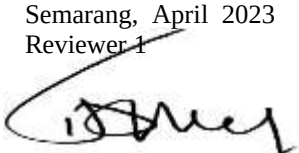
Semarang, April 2023
Reviewer 1



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NIP. 196902141994032002
Unit Kerja: FSM UNDIP
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Artikel sesuai bidang ilmu pengusul (penulis pembantu) yaitu bidang statistika terapan khususnya time series analysis, serta tidak terindikasi plagiasi yang dibuktikan dengan indeks kemiripan 12%.

Semarang, April 2023
Reviewer 2

Nama : Prof. Dr. Sunarsih, M.Si
NIP : 195809011986032002
Unit Kerja : FSM Undip
Bidang Ilmu: Matematika

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Yang bertanda tangan di bawah ini

Nama	: Dr. Tarno. M.Si
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Sains Malaysiana 51(3)(2022): 633-642
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Allelopathic Potential of Cassava (*Manihot esculenta* L.) Extracts on Germination and Seedling Growth of Selected Weeds and Aerobic Rice

(Potensi Alelopati Ekstrak Ubi Kayu (*Manihot exulenta* L.) terhadap Percambahan dan Pertumbuhan Anak Benih Rumpai Terpilih dan Padi Aerobik)

SITI AISYAH MOHAMMAD TAUPIK[1,2,3,4], SITI NUR ANISAH AANI[3], CHIA POH WAI[5] & CHUAH TSE SENG[2,*]

[1]*Institute of Graduate Studies, Universiti Teknologi MARA, 40450 Shah Alam, Selangor Darul Ehsan, Malaysia*
[2]*Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, 02600 Arau, Perlis Indera Kayangan, Malaysia*
[3]*Faculty of Plantation and Agrotechnology, Universiti Teknologi MARA, 77300 UiTM Merlimau, Melaka, Malaysia*
[4]*Faculty of Fisheries and Food Sciences, Universiti Malaysia Terengganu, 21030 UMT Kuala Nerus, Terengganu Darul Iman, Malaysia*
[5]*Faculty of Science and Marine Environment, Universiti Malaysia Terengganu, 21030 UMT Kuala Nerus, Terengganu Darul Iman, Malaysia*

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ABSTRACT

Weed infestation is a major problem in the aerobic rice system due to the lack of standing water that could prevent the growth of weeds. To reduce heavy reliance on herbicide, this research aims to determine the potential of cassava allelopathy for inhibition of weeds in aerobic rice. The allelopathic potential of cassava extracts on the germination and growth of tested weed species (*Eleusine indica, Ageratum conyzoides,* and *Cyperus distans*) and aerobic rice (*Oryza sativa*) was conducted in the laboratory. The results showed that increasing the aqueous extract concentrations of cassava extracts inhibited the germination and seedling growth of tested weeds, suggesting the allelopathic effects of cassava extracts are concentration dependent. The degree of phytotoxicity of different vegetative parts of cassava can be classified in order of decreasing inhibition as follows: leaf, stem, tuber, and tuber peel. Aqueous leaf extract of cassava at a concentration of 0.5% (w/v) provided complete inhibition on *A. conyzoides, E. indica,* and *C. distans* germination whereas 25% to 100% inhibition on the shoot growth was recorded. By contrast, the shoot growth and germination of aerobic rice were not affected. These results suggest that the cassava leaf extracts contain water-soluble allelochemicals for inhibition on *A. conyzoides, E. indica,* and *C. distans* in aerobic rice.

Keywords: *Ageratum conyzoides;* aqueous leaf extract; *Cyperus distans; Eleusine indica; Manihot esculenta*

ABSTRAK

Serangan rumpai adalah masalah utama dalam sistem padi aerobik kerana kekurangan air bertakung dapat mengawal pertumbuhan rumpai. Bagi mengurangkan kebergantungan yang tinggi pada racun rumpai, kajian ini bertujuan untuk menentukan potensi alelopati ubi kayu untuk perencatan rumpai dalam padi aerobik. Potensi alelopati ekstrak ubi kayu terhadap percambahan dan pertumbuhan rumpai (*Eleusine indica, Ageratum conyzoides* dan *Cyperus distans*) dan padi aerobik (*Oryza sativa*) dijalankan dalam pengasaian makmal. Hasil kajian menunjukkan bahawa peningkatan kepekatan ekstrak akues ubi kayu telah merencatkan percambahan, pertumbuhan anak benih dan pertumbuhan akar rumpai yang diuji dan ini mencadangkan kesan alelopati ekstrak ubi kayu bergantung kepada kepekatan. Tahap kefitotoksikan daripada bahagian vegetatif ubi kayu yang berbeza dapat dikelaskan dalam urutan penurunan perencatan seperti berikut: daun, batang, ubi dan kulit. Ekstrak daun ubi kayu pada kepekatan 0.5% (w/v) memberi perencatan sepenuhnya terhadap percambahan rumpai manakala perencatan sebanyak 25% hingga 100% ke atas pertumbuhan pucuk *A. conyzoides, E. indica* dan *C. distans* dicatatkan. Sebaliknya, pertumbuhan pucuk dan percambahan padi aerobik tidak terjejas. Hasil ini menunjukkan bahawa ekstrak daun ubi kayu mengandungi alelokimia yang larut dalam air untuk merencat *A. conyzoides, E. indica* dan *C. distans* dalam padi aerobik.

Kata kunci: *Ageratum conyzoides; Cyperus distans;* ekstrak daun ubi; *Eleusine indica; Manihot esculenta*

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Curie-point Depths, Geothermal Gradients and Sub-Surface Heat Flow Estimation from Spectral Analysis of High-Resolution Aeromagnetic Data over Gongola Basin and Its Environs, Northeastern Nigeria

(Kedalaman Titik Curie, Kecerunan Geoterma dan Anggaran Aliran Haba Sub-Permukaan daripada Analisis Spektrum Data Aeromagnetik Resolusi Tinggi di Lembangan Gongola dan Sekitarnya, Timur Laut Nigeria)

ABUBAKAR YUSUF[1,2], LIM HWEE SAN[1,*] & ISMAIL AHMAD ABIR[1]

[1]*Exploration Geophysics Section, School of Physics, Universiti Sains Malaysia, 11800 Penang, Malaysia*
[2]*Department of Geology, Faculty of Science, Gombe State University, P.M.B. 0127, Gombe, Nigeria*

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ABSTRACT

Geothermal energy resources have been established globally to be among the sustainable and environmentally harmless means of energy generation. Curie-point depths (CPD), temperature gradients, and heat flow data over the study area were computed using a spectral analysis method in order to have a preliminary view of the geothermal implications (prospect) of the current area. Aeromagnetic data acquired by the Nigerian Geological Survey Agency (NGSA) in the year 2009 was used for the research. The results showed the minimum, maximum, and the average CPD values as 8.18 km, 31.48 km, and 13.0 km, respectively. The minimum, maximum and average thermal gradients obtained were 18.42 °C/km, 70.91 °C/km, and 50.2 °C/km, respectively. The heat flow data obtained ranged from 33.15 mW/m^2 to 177.28 mW/m^2, with an average value of 110.65 mW/m^2. Locations depicting shallow CPDs anomalies (Alkaleri, Darazo, Dukku, Misau, Wuyo, Deba, and Tula), also showed conformity with high heat flow areas. As such, they are regarded as areas of promising geothermal prospects and are recommended for further detailed investigation. Locations depicting a high magnetic susceptibility contrast from a generated analytic signal map, as well as high temperature gradients, high heat flow, and shallow CPDs are attributed to crustal thinning along the sedimentary basin and magmatic intrusions along basement areas, respectively. The magnetic depth to the basement calculated for the study area using the source parameter imaging (SPI) method ranges from 0.610 km to 3.055 km. The present study has provided an insight on preliminary information, regarding new areas of possible geothermal prospects for further detailed investigation.

Keywords: Aeromagnetic; Curie-point depth; heat flow; spectral analysis; temperature gradients

ABSTRAK

Sumber tenaga geoterma telah ditubuhkan secara global untuk menjadi antara kaedah penjanaan tenaga yang mampan dan tidak berbahaya kepada alam sekitar. Kedalaman titik Curie (CPD), kecerunan suhu dan data aliran haba ke atas kawasan kajian telah dihitung menggunakan kaedah analisis spektrum untuk mendapatkan pandangan awal tentang implikasi (prospek) geoterma bagi kawasan semasa. Data aeromagnet yang diperoleh oleh Agensi Kajian Geologi Nigeria (NGSA) pada tahun 2009 digunakan untuk penyelidikan. Keputusan menunjukkan nilai CPD minimum, maksimum dan purata masing-masing 8.18 km, 31.48 km dan 13.0 km. Kecerunan terma minimum, maksimum dan purata yang diperoleh ialah 18.42 °C/km, 70.91 °C/km dan 50.2 °C/km, masing-masing. Data aliran haba yang diperoleh adalah antara 33.15 mW/m2 hingga 177.28 mW/m2, dengan nilai purata 110.65 mW/m2. Lokasi yang menggambarkan anomali CPD cetek (Alkaleri, Darazo, Dukku, Misau, Wuyo, Deba dan Tula), juga menunjukkan pematuhan dengan kawasan aliran haba yang tinggi. Oleh itu, ia dianggap sebagai kawasan prospek geoterma yang menjanjikan dan disyorkan untuk kajian terperinci lanjut. Lokasi yang menggambarkan kontras kerentanan magnet yang tinggi daripada peta isyarat analitik yang dijana, serta kecerunan suhu tinggi, aliran haba yang tinggi dan CPD cetek dikaitkan dengan penipisan kerak di sepanjang lembangan sedimen dan pencerobohan magmatik di sepanjang kawasan bawah tanah.

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Oxidation of Lignin-Carbohydrate Complex by Laccase/Co(salen) One-Pot Catalysis

(Pengoksidaan Kompleks Lignin-Karbohidrat oleh Lakase/Co(salen) Pemangkinan Satu Periuk)

XUE-FEI ZHOU[1,2,*]

[1]*Key Lab of Aromatic Plant Resources Exploitation and Utilization in Sichuan Higher Education, Yibin University, 644000 Yibin, China*
[2]*Faculty of Chemical Engineering, Kunming University of Science and Technology, 650500 Kunming, China*

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ABSTRACT

Lignin-carbohydrate complex (LCC) is hybrid structures containing covalently linked moieties of lignin and carbohydrates. The nature and amount of LCC affect both industrial processes and practical applications of lignocellulosic biomass. Herein, the LCC was isolated from bamboo by successive solvent extraction and precipitation. The effects and mechanism of LCC oxidation respectively by laccase, Co(salen), and laccase/Co(salen) in the presence of molecular oxygen have been investigated by composition analysis using the standard of National Renewable Energy Laboratory (NREL) and high-performance anion exchange chromatography (HPAEC), GPC, FTIR, and 2D-HSQC NMR. We can conclude that the laccase/Co(salen) one-pot catalysis modified the LCC in such a way that more carbohydrate was removed from the LCC with lower molecular weight of LCC as shown by GPC; the catalytic treatments produced oxidation at lignin side-chains and cleavage of lignin β-O-4', β-β' and β-5' bonds in LCC, and cleavage of benzyl-sugar ether, phenyl glycoside and γ-ester bonds in LCC, as shown by FTIR and 2D-HSQC NMR, especially after the laccase/Co(salen) one-pot treatment. The further insight of LCC degradation was discussed in light of the results obtained in oxidation of the LCC model compound coniferin.

Keywords: Co(salen); lignin-carbohydrate complex (LCC); one-pot catalysis, laccase; oxidation

ABSTRAK

Kompleks lignin-karbohidrat (LCC) ialah struktur hibrid yang mengandungi gugusan lignin dan karbohidrat yang dikaitkan secara kovalen. Sifat dan jumlah LCC mempengaruhi kedua-dua proses perindustrian dan aplikasi praktikal biojisim lignoselulosa. Di sini, LCC telah diasingkan daripada buluh melalui pengekstrakan dan pemendakan pelarut berturut-turut. Kesan dan mekanisme pengoksidaan LCC masing-masing oleh lakase, Co(salen) dan lakase/Co(salen) dengan kehadiran molekul oksigen telah dikaji melalui analisis komposisi menggunakan piawaian *National Renewable Energy Laboratory* (NREL) dan anion berprestasi tinggi. Kromatografi pertukaran (HPAEC), GPC, FTIR dan 2D-HSQC NMR. Kita boleh membuat kesimpulan bahawa pemangkinan satu pot lakase/Co(salen) mengubah suai LCC dengan cara yang lebih banyak karbohidrat dikeluarkan daripada LCC dengan berat molekul LCC yang lebih rendah seperti yang ditunjukkan oleh GPC; rawatan pemangkin menghasilkan pengoksidaan pada rantaian sisi lignin dan pembelahan ikatan lignin β-O-4', β-β' dan β-5' dalam LCC dan pembelahan ikatan benzil-gula eter, fenil glikosida dan γ-ester dalam LCC, seperti yang ditunjukkan oleh FTIR dan 2D-HSQC NMR, terutamanya selepas rawatan satu pot lakase/Co(salen). Kajian lanjut tentang degradasi LCC telah dibincangkan berdasarkan keputusan yang diperoleh dalam pengoksidaan koniferin sebatian model LCC.

Kata kunci: Co(salen); kompleks lignin-karbohidrat (LCC); pemangkinan satu periuk, lakase; pengoksidaan

INTRODUCTION

Biomass is the fourth largest energy source following coal, oil, and natural gas. Biomass refinery as a renewable complement to the petroleum refinery becomes imperative for clean and sustainable production. The conversion of lignocellulosic biomass plays important role for the utilization of biomass for the production of fuels and chemicals (Ahmad et al. 2020; Nakagawa et al. 2020).

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Modeling and Forecasting the Realized Volatility of Bitcoin using Realized HAR-GARCH-type Models with Jumps and Inverse Leverage Effect

(Memodel dan Meramalkan Kemeruapan Nyata Bitcoin menggunakan Model Nyata Jenis HAR-GARCH dengan Lompatan dan Kesan Tuasan Songsang)

MAMOONA ZAHID[1], FARHAT IQBAL[1]*, ABDUL RAZIQ[1] & NAVEED SHEIKH[2]

[1]*Department of Statistics, University of Balochistan, Quetta, Pakistan*
[2]*Department of Mathematics, University of Balochistan, Quetta, Pakistan*

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ABSTRACT

Using the high-frequency data of Bitcoin, this study aims to model the time-varying volatility identified in the residuals of the heterogeneous autoregressive (HAR) model of realized volatility using the symmetric, asymmetric and long-memory generalized autoregressive conditional heteroscedastic (GARCH) models. We further extended these models by incorporating jumps and continuous components in the realized volatility estimators and investigating the impact of the inverse leverage effect. The Diebold Mariano and model confidence set test confirm that the forecasting performance of HAR-type models can be effectively improved by these innovations. The long memory HAR-GARCH model with jumps and continuous components provided better forecasting accuracy for Bitcoin volatility as compared to other realized volatility models. The findings of this study may benefit individual investors and risk managers who wish to minimize risks and diversify their portfolios to maximize profits in Bitcoin's investment.

Keywords: Bitcoin; HAR-GARCH; high-frequency data; inverse leverage; realized volatility

ABSTRAK

Dengan menggunakan data frekuensi tinggi Bitcoin, kajian ini bertujuan untuk memodelkan kemeruapan berbeza masa yang dikenal pasti dalam residu model autoregresi heterogen (HAR) daripada kemeruapan nyata menggunakan model simetri, asimetri dan memori panjang teritlak autoregresi bersyarat heteroskedastik (GARCH). Model-model ini terus diperluaskan dengan memasukkan lompatan dan komponen berterusan dalam penaksir kemeruapan nyata dan mengkaji kesan tuasan songsang. Diebold Mariano dan model ujian set keyakinan mengesahkan bahawa prestasi ramalan model jenis HAR dapat ditingkatkan dengan berkesan melalui inovasi ini. Model memori panjang HAR-GARCH dengan lompatan dan komponen berterusan memberikan ketepatan ramalan yang lebih baik untuk kemeruapan Bitcoin berbanding model kemeruapan nyata yang lain. Hasil kajian ini dapat memberi manfaat kepada pelabur individu dan pengurus risiko yang ingin meminimumkan risiko dan mempelbagaikan portfolio mereka untuk memaksimumkan keuntungan dalam pelaburan Bitcoin.

Kata kunci: Bitcoin; data frekuensi tinggi; HAR-GARCH; kemeruapan nyata; tuasan songsang

INTRODUCTION

Cryptocurrencies are digital decentralized currencies that rely upon cryptography for the generation, distribution, and circulation of money. Since the creation of Bitcoin, the first cryptocurrency by Satoshi Nakamoto in 2009, more than 5500 cryptocurrencies have been introduced in the market. Cryptocurrency returns are highly volatile and riskier than fiat currencies (Osterrieder et al. 2017). The volatile market of cryptocurrencies has attracted many and its modeling and predictions have become a hot topic among researchers and financial practitioners (Zhang & Lan 2014).

Bitcoin is mainly used for investment purposes and the profitability of investments in the Bitcoin market greatly depends on the predictability of its price movements. Investment risk and uncertainty can be