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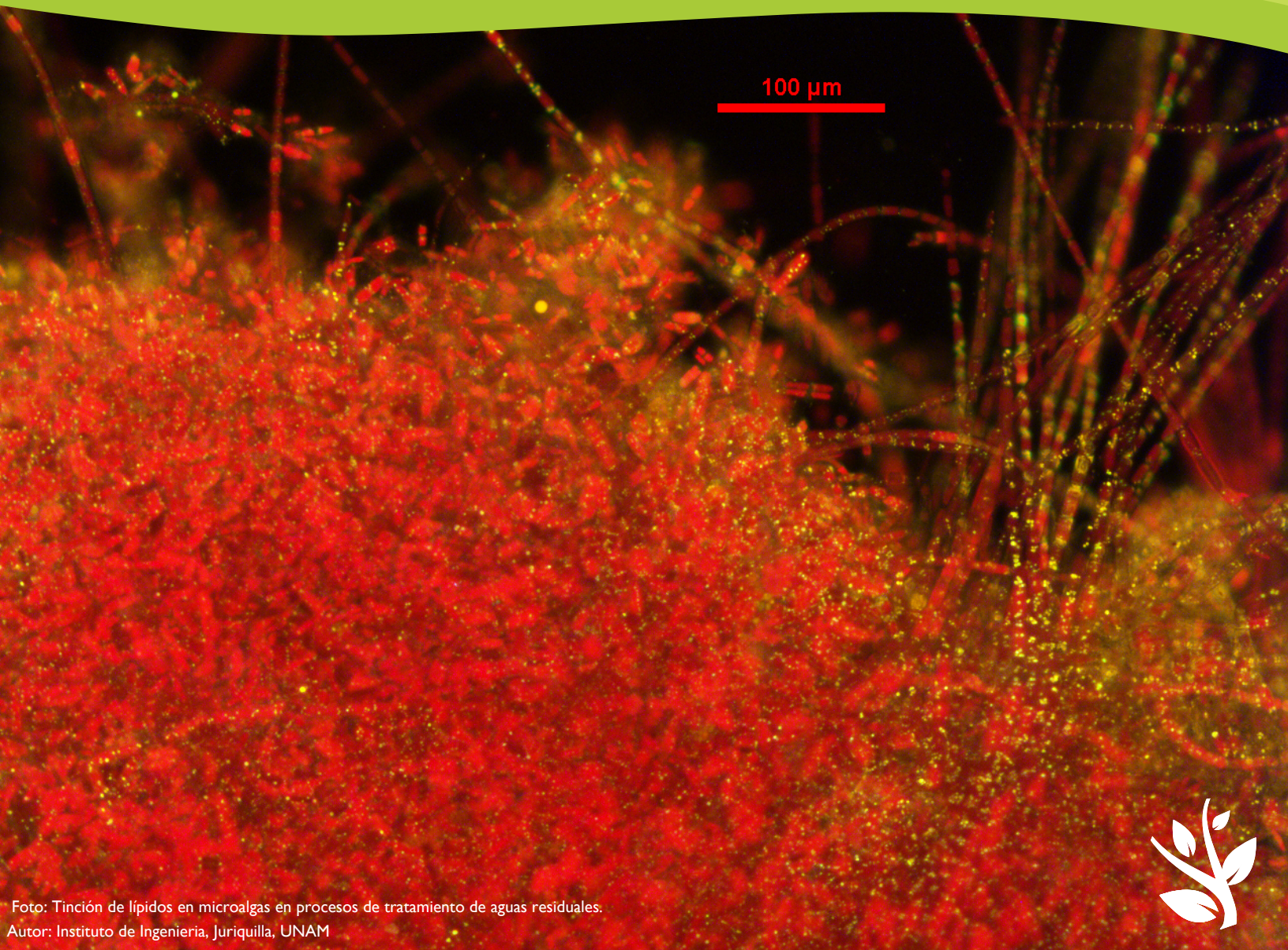

Foto: Tinción de lípidos en microalgas en procesos de tratamiento de aguas residuales.
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El enfoque es multidisciplinario, buscando contribuir en forma directa a la generación de conocimiento, al desarrollo de tecnologías y a un mejor desempeño profesional. Entre los temas cubiertos por la revista están los siguientes: agua potable, calidad de agua, aguas residuales, residuos sólidos, energía, contaminación, reciclaje, cambio climático, salud ambiental, nuevas tecnologías, ética, educación, legislación y política ambiental, gestión ambiental, sostenibilidad y participación social, entre otros.

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INVESTIGAÇÃO DA IMPORTÂNCIA DADA PELOS PROFISSIONAIS DA REGIÃO METROPOLITANA DE PORTO ALEGRE, BRASIL PARA O DESEMPENHO AMBIENTAL EM SEUS PROJETOS

Fernanda Flach[1]
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*Marco Aurélio Stumpf González[1]
Andrea Parisi Kern[1]

INVESTIGATION OF THE IMPORTANCE GIVEN BY THE PROFESSIONALS OF THE METROPOLITAN AREA OF PORTO ALEGRE, BRAZIL FOR ENVIRONMENTAL PERFORMANCE IN THEIR PROJECTS

Recibido el 13 de enero de 2016; Aceptado el 24 de noviembre de 2016

Abstract

The civil construction industry is experiencing changes of certain paradigms, with the inclusion of performance requirements in the design process. One of the important references is the implantation of the Brazilian regulation about performance, which define parameters to be follows to reach building performance. By influence of this norm, the choices of the professionals in the area of the civil construction should be directed to serve the welfare of the users. The objective of the work is to investigate the knowledge of professionals in environmental performance, focusing in acoustic and thermal aspects. The analysis of the experiences of architects and civil engineers involved in the research was conducted through a questionnaire, applied to professional that work in the Metropolitan Area of Porto Alegre, Brazil. The results indicate the need to show the importance of performance on design process. This study aims to contribute to increase performance of buildings and well-being of the users.

Key Words: construction industry, performance requirements, acoustic performance, thermal performance.

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CAPTAÇÃO E ARMAZENAMENTO DE ÁGUA DE CHUVA, PETROLINA, PE: AVALIAÇÃO DE ASPECTOS ESTRUTURAIS E DE QUALIDADE DA ÁGUA

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Luiza Teixeira de Lima Brito[2]
Glaucia Suêrda Gomes do Nascimento[1]
José Antunes da Silva Neto[1]
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RAINWATER HARVESTING AND STORAGE, PETROLINA-PE: STRUCTURAL ASPECTS AND WATER QUALITY ASSESSMENT

Recibido el 23 de febrero de 2016; Aceptado el 23 de marzo de 2017

Abstract

Rainwater harvesting and storage systems are widely used as water supply alternatives in semi-arid regions. In Brazil, they have been implemented as a government policy and, mainly, by non-governmental organizations. However, problems related to structural aspects, such as management and water quality, expose them to contamination risks. The evolution of Brazilian drinking-water regulation and the increasing use of rainwater for drinking purposes, associated with the lack of specific quality laws, require studies that subsidize the regulation of this method of water supply, taking into account the need to guarantee the drinking water quality of the rural population. Thus, this study aimed to present the characterization of rainwater harvesting and storage systems in the localities of Settlement Esperança, Cristália and Lajedo, in the municipality of Petrolina, Pernambuco State, by observation of the structural aspects, the management system, and water quality assessment. The results obtained provided supports to management programs that aim at the application of current rules, as a way to guarantee the water potability and health protection of populations that use such systems.

Key-words: rainwater, rural system, semi-arid, water quality.

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PÓS-TRATAMENTO DE EFLUENTE ANAERÓBIO EM LAGOAS DE POLIMENTO COM ALIMENTAÇÃO EM FLUXO CONTÍNUO E BATELADA

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POST-TREATMENT OF WASTEWATER ANAEROBIC IN POLISH OF PONDS WITH FOOD IN FLOW CONTINUOUS AND BATCH

Recibido el 28 de febrero de 2016; Aceptado el 16 de diciembre de 2016

Abstract

This study evaluated the UASB reactor effluent post-treatment in polishing ponds fed with continuous and batch flows. Different depths were investigated in two experimental stages. At the first stage, the experimental system consisted in four polishing ponds, being two monitored with continuous feed (LC_{57} and LC_{45}) and two feed semicontinuous (LB_{57} and LB_{45}), the ponds LC_{57} and LB_{57} were 57 cm deep, and the ponds LC_{45} and LB_{45} were 45 cm deep, all of them operated with a 12 days HRT. The second stage of the experimental work consisted of three ponds 45 cm deep, two fed in a batches and 8 days HRT (LBT_{45} and $LB2_{45}$) and the third fed continuously with HRT of 12 days ($LC2_{45}$). At the first stage, the obtained efficiencies of removals nitrogen overall kjeldahl, nitrogen ammonia and fecal coliforms of pond LC_{45} were respectively 55%, 71% and 99.3%, higher them the removal efficiencies of the ponds LC_{57} (53%, 62% and 99.3%), LB_{57} (39%, 47% and 96.9%) and LB_{45} (35%, 49% and 97.2%). In the second stage, the ponds with power batch eight days HRT not significantly different tank with continuous feed and 12 days of HRT, but highlights others for production achieved effluent treating a larger volume of afluent in less time.

Keywords: feed batches, feed continuous, nutrient removal, polishing ponds, removal of fecal coliforms.

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Resumo

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IDENTIFICAÇÃO DO INTERVALO DE TEMPO DE MÁXIMA PREVISIBILIDADE DE AFLUÊNCIAS DE UM RESERVATÓRIO NO SEMIÁRIDO BRASILEIRO

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IDENTIFICATION OF TIME INTERVAL OF MAXIMUN PREDICTABILITY OF AFFLUENCE OFA RESERVOIR IN THE BRAZILIAN SEMIARID

Recibido el 3 de marzo de 2016; Aceptado el 23 de marzo de 2017

Abstract

The aim of this study seek the Time Interval of Maximum Predictability (TIMP) of affluence in reservoir over the semi-arid region of Brazil. Precipitation data were used from the ECHAM 4.5 global and the RAMS 6.0 regional models for the hydrographic basin of the Alto Jaguaribe in Ceará State. The results of the ensemble members of atmospheric models have been corrected by the Probability Density Function (PDF) method and then inserted into the hydrological model Soil Moisture Account (SMA) of the Hydrologic Engineering Center - Hydrologic Modeling System (HEC-HMS), for simulation and analysis of affluences. To determine the TIMP were used the Heidke Skill Score (HSS) and Nash-Sutcliffe (NS) index to analyze the modeled and observed datas. The results show that the coupling of climate and hydrological models has a deficiency in affluence forecast for the first two months of the year with TIMP ≤ 60 days (HSS <0.1 and NS <0.03) and improved performance from March with ITEMP ≥ 60 days (HSS> 0.45 and NS> 0.75).

Key Words: Soil Moisture Account, flow forecast, reservoir management.

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BIOAUMENTACIÓN DE UN BIOREACTOR DISCONTINUO PARA LA DEGRADACIÓN DE AGUA RESIDUAL CONTENIENDO UN LÍQUIDO IÓNICO

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BIOAUGMENTATION OF A DISCONTINUOUS BIOREACTOR FOR THE DEGRADATION OF A WASTEWATER CONTAINING AN IONIC LIQUID

Recibido el 10 de marzo de 2016; Aceptado el 24 de noviembre de 2016

Abstract

Ionic liquids (IL) has been employed in various industrial applications as solvents are chemical reactions, and compounds were considered friendly to the environment since volatilization is small, decreasing the risk of air pollution. However, it has been found to be soluble in water and showed toxicity to aquatic organisms. Due to the possible use in large-scale industries, it is necessary to determine its biodegradation in the case to be detected in wastewater. The objective of this work was to investigate the biodegradation of an IL model, BmimCl, by microorganisms obtained from an activated sludge wastewater treatment plant in an aerobic SBR system and, to determine if a bioaugmentation of the microbial community can increase the BmimCl degradation efficiency. The results showed that bioaugmentation of activated sludge microbial consortium previously exposed to BmimCl was not demonstrated a significant increase in degrading capacity of the microbial community. The BmimCl concentrations evaluated do not show to be toxic to microorganisms and permits the consumption of the co-substrate and transform the IL. It was demonstrated that there is not an ultimate degradation of the BmimCl, but only a transformation to 1-butylimidazolium.

Key Words: activated sludge; biodegradability; imidazolium; ionic liquid; SBR.

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QUANTIFICAÇÃO DE RESÍDUOS SÓLIDOS CARREADOS NA REDE DE DRENAGEM DE UMA BACIA URBANA

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QUANTIFICATION OF SOLID WASTE TRANSPORTED IN DRAINAGE SYSTEM OF URBAN BASIN

Recibido el 14 de marzo de 2016; Aceptado el 9 de febrero de 2017

Abstract

This study characterizes the solid waste transported in the drainage system of a hydrographic basin, with consolidated urbanization, population density and territorial extension. In this case, the basin assessed covers an area that included the Belém and Ananindeua cities (Pará, Brazil), which were identified elements with strong influence in waste arising in urban drainage systems. The results indicated a high per capita contribution of solid waste (1.10 kg.inhab^{-1}.year^{-1}) and a greater load of organic waste being transported in the rainy periods (45% of the waste mass, reducing to 39% in the dry periods). A gravimetric analysis showed that the greater load is represented by wood (47% w/w), due to rubble disposal in inappropriate areas, considering the difficulty of disposal of such waste and then it accumulates in public areas until someone removes it. Secondly, organic matter (43% w/w) and plastic materials (7% w/w) represent the pollutants retained in this basin.

Key Words: Solid waste, urban drainage, physical characterization, quantity of litter.

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TRATAMENTO DE EFLUENTES EM FOTOBIORREATORES ILUMINADOS POR DIODOS EMISSORES DE LUZ (LEDs) DE BAIXA INTENSIDADE LUMINOSA

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WASTEWATER TREATMENT IN PHOTOBIOREACTORS ILLUMINATED BY LOW INTENSITY LIGHT EMITTING DIODES (LEDS)

Recibido el 15 de abril de 2016; Aceptado el 23 de marzo de 2017

Abstract

Light Emitting Diodes (LEDs) application in different processes have important advantages: low energy consumption and high durability. In addition, the LEDs are free of toxic substances. In the effluent treatment, articifical light is currently used in the disinfection processes, to remove pathogens, and in the advanced oxidative processes, to remove recalcitrant organic matter (OM). With the application of LEDs, light also can be used to remove other pollutants, such as nitrogen (N) and phosphorous (P). An exemple of the LEDs use to remove pollutants are the photobioreactors for cultivation of microalgae, which treat effluent and also produces biomass for bioproducts. This research evaluated the efficiency of three different photobioreactors configurations illuminated by LEDs of low luminous intensity, operated in batch, to treat domestic effluent. Results showed that all of the them were efficient for the removal of the analyzed pollutants. The removal efficience was greater than 70% for N, 60% for P, 91% por OM, and 4 log units of Escherichia coli, which was an indicative of fecal contamination. Furthermore, biomass concentration was higher than 250 mg / L in all the photobioreactors, indicating high biomass production.

Key words: LED, Microalgae, Photobioreactors, Wastewater treatment.
Key words: LED, Microalgae, Photobioreactors, Wastewater treatment.

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INFLUÊNCIA DE VARIÁVEIS SOCIOECONÔMICAS MUNICIPAIS NO CONSUMO PER CAPITA DE ÁGUA

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INFLUENCE OF MUNICIPAL SOCIOECONOMIC VARIABLES ON PER CAPITA WATER CONSUMPTION

Recibido el 5 de mayo de 2016; Aceptado el 23 de marzo de 2017

Abstract

The government may utilize proper urban planning in order to universalize the public's access to safe, sanitary drinking water. In this planning, water consumption has an important role in the design of water supply systems, and this consumption can be influenced by municipal indicators of income and quality of life. This study analyzed the influence of municipal gross domestic product (GDP) and the human development index (HDI) on per capita water consumption in twenty-six cities located in the southwestern portion of the State of Goiás, Brazil using annual data from 2001 to 2011. This influence was analyzed by Pearson correlation and the results showed a moderately positive to strongly positive correlation between GDP and water consumption for most municipalities, suggesting that the higher the municipal wealth, the higher the per capita water consumption of the population. In contrast, the influence of HDI on said consumption was rated as poor. The analysis proved to be a simple and useful operational tool for agencies that are responsible for urban planning and sanitation studies.

Keywords: linear correlation, sanitation, socioeconomic indicators, urban planning, water supply

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PRODUTIVIDADE DA MAMONA CULTIVAR BRS NORDESTINA FERTILIZADA COM URINA HUMANA NA AGRICULTURA DE PEQUENO PORTE

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PRODUCTIVITY OF CASTOR BEAN CULTIVATE BRS NORDESTINA FERTILIZED WITH HUMAN URINE IN SMALL-SCALE AGRICULTURE

Recibido el 19 de julio de 2016; Aceptado el 23 de marzo de 2017

Abstract

This research aimed to analyze the performance of castor bean cultivar BRS Nordestina in terms of productivity when fertilized with human urine. The design of the experiment was randomized blocks with five treatments and four replications. The treatments were: T1 - raw water and chemical and organic fertilization, T2 - raw water, lime and urine at the recommended dose, T3 - raw water and urine at the recommended dose; T4 - raw water and 0.5 urine of the recommended dose and T5 - raw water and 1.5 urine of the recommended dose. Concerning plant height and stem diameter, there was no significant difference ($p > 0.05$) when comparing the treatments T1, T2 and T5. Regarding to the thousand seed weight parameter, there was no significant difference when the castor bean was fertilized with chemical or natural (urine) fertilizer. The chemical fertilizer (T1) responded significantly and reached the highest productivity ($p < 0.05$) at the end of the cycle. The results indicated the potentiality of replacement of chemical fertilizer by urine, under the parameters of production here evaluated.

Keywords: yellow water, energy crops, reuse, biofertilizer

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