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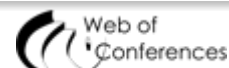


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 Menu

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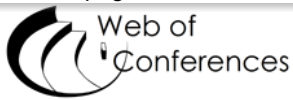
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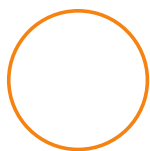
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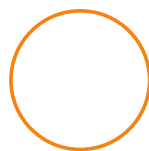


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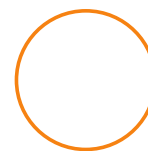
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Menu

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Evaluation of Public Special School Environment (case: SLB Negeri Ungaran)

*Bangun I.R. Harsritanto**, Dessy Oktavia, Mira Annisa Rezeki, Hermin Werdiningsih

Architecture Department, Engineering Faculty, Universitas Diponegoro, Semarang, Indonesia

Abstract. Information of design standard often become debatable condition in construction process. That condition brought different performance of building especially public building such public special schools. This paper aimed to emphasize the design regulation on special school by evaluating a public special school in Semarang Regency SLB Negeri Ungaran. The standard of education building standard of PERMENDIKNAS RI No. 33/2008 was being resumed into design criteria, then it became the evaluation sheet to value the case. The result of this research shown that most of the mandatory space already being built but the details were not designed as the standards.

1 Introduction

Education is a human right which being mandated on Indonesia's basic constitution UUD 1945 verse 31 (1) as mentioned that "every citizen have right in education" [1]. Every citizen as described before also included the people with disabilities. The derivatives constitution was published on regulation UU no 20/2003 verse 5 (2) which said "every citizen with physical, mental, emotional, social disabilities have right to study on special education facilities" [2].

However, we found citizen with disabilities with no proper education of 12 years mandatory basic education in the real condition. Indonesia citizen with disabilities estimated 12.5% of all citizen but 45.57% of them were never graduated from elementary school [3, 4]. Data of 14 Indonesia provinces shown that 60% of student age citizen with disabilities were not schooled [5]. The biggest problem for citizen with disabilities in gaining education is no open access for them to study in special education facilities [6].

Indonesia has more than 4929 special schools from kindergarten until high school grade with 28914 class on them [7]. But 73% of students were studied in private school and the remain 27% attended the public school [8]. This condition indicated that government/public schools were not provided the good performance in serving the citizen with disabilities [9]. Nowadays the ministry of education has planned to build 25 until 30 special schools in a year to serve national education for all citizens [10]. Furthermore, the demand of quantities in every city/regency is more than a special school with its facilities shall be the national priority, since some region has very large population and coverage area [11].

Above situation brought a massive construction in special education facilities in every region in Indonesia [12]. However, the mass production often not followed by proper

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Oil palm and banana root colonization potential of locally isolated nitrogen-fixing and phosphate-solubilizing bacteria

Then Kek Hoe¹, Mohamad Roji Sarmidi², Sharifah Shahrul Rabiah Syed Alwee¹, and Zainul Akmar Zakaria^{2*}

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Keywords: oil palm; banana; root; bacteria; electron microscopy

Abstract. Oil palm and banana are the biggest commodity crop and the second largest fruit crop planted in Malaysia. Both oil palm and banana are highly nutrient-demanding crops that requires a large amount of fertilizer input. This presents an opportunity to find alternative source of nutrient that is much cheaper than the imported inorganic fertilizer. Currently, the most feasible alternative to the inorganic fertilizer is the recycling of the organic-rich oil palm empty fruit bunch (EFB) to produce EFB compost as well as the incorporation of nitrogen-fixing bacteria (NFB) and phosphate-solubilising bacteria (PSB) to the EFB compost to increase the supply of nitrogen and phosphorous to the plant at different stages of growth. Hence, the objective of this study was to isolate, screen and identify indigenous bacterium, from the root surroundings of oil palm and banana plant, with highest nitrogen-fixing and phosphate-solubilizing properties. Three NFB and PSB strains (*Enterobacter cloacae* KU886016, *Burkholderia cepacia* KU925862, *Serratia marcescens* KU925861), were successfully isolated and formulated as biofertilizer for evaluation on oil palm and banana seedlings. *Enterobacter cloacae* KU886016 showed higher root colonization ability compared to *Burkholderia cepacia* KU925862 and *Serratia marcescens* KU925861, as shown from the FESEM analysis. This finding is important as a direct indication on the suitability of using these bacteria in field application as biofertilizer. Long-term expectation is for this finding to be able to assist in reducing the dependency on imported inorganic fertilizers, reducing operational cost as well as promoting sustainable soil health.

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Life Cycle Thinking for Sustainable Consumption and Production towards a Circular Economy

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Abstract. The current model of a linear economy with end-of-pipe waste treatment is not sustainable. Cleaner production helps reduce resource use and emissions, but is still not an optimal solution without considering a life cycle perspective. Life cycle-based tools such as life cycle assessment and life cycle costing are useful for identifying optimal environmental and economic options for product systems. SDG 12 dealing with responsible consumption and production is key for sustainability. Developing of a circular economy requires life cycle thinking and life cycle-based tools for assessment. All these issues are discussed along with illustrative examples.

1 Introduction

Every activity is associated with some consequences; the desired objective of the activity usually leading to some benefit to society but also with some undesired outcomes which are unplanned, but inevitable. In practice, thermodynamics does not allow us to break even and we will end up losing some utility whenever there is an activity or transformation. Activities in nature must also follow this law, but a decrease in entropy is powered by energy from the sun. Activities in nature are part of ecosystems, large and small, which are very delicately but efficiently balanced in a way that there is no waste per se. All elements/substances move in cycles which is, for example, easily evident in the hydrological cycle which represents the cyclic movement of water on earth. There are many such biogeochemical cycles for nitrogen, sulphur and so on. Industrial activities, on the other hand, have largely been developed in a linear format – so called take, make, use and dispose (Figure 1). We take valuable resources from nature, transform them to products which are then used and finally go back to nature in the form of waste – solid, liquid or gaseous. The loop is not “closed”. Hence, every activity must somehow lead to some form of pollution being produced.

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