IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, April 2022
Impact Factor: 6.252

Experimental Investigation on Concrete Using Agricultural Waste Ash-A Review

Sakshi A. Zambre[1], G. D. Dhavale[2], V. A. Kalmegh[3]
PG Student/Research Scholar, Department of Civil Engineering[1]
Professor, Department of Civil Engineering[2]
Assistant Professor, Department of Civil Engineering[3]
Bapurao Deshmukh College of Engineering Sevagram, Maharashtra, India

Abstract: *The present study is aim to develop a high strength concrete bye using mineral admixtures of bamboo leaf ash and pawpaw leaf ash. In order to check the compatibility, physical and chemical properties of materials are studied. This aims to provide a comprehensive review of recent trends incorporating biomass ashes from agricultural waste in ordinary Portland cement(OPC).The material properties of different leaf ashes and their effect on fresh and hardened concrete properties are review. Partial replacement of OPC with by products, such as bamboo leaf ash, pawpaw leaf ash. Partial replacement of OPC with by products, such as bamboo leaf ash, pawpaw leaf ash. It will also contribute to the effort of achieving zero waste technology and sustainable development.*

Keywords: Bamboo leaf ash, pawpaw leaf ash, Compressive Strength**.**

I. INTRODUCTION

Concrete is most widely used human made material in existence. It is the second most consumed substance on the planet after water, mainly due to its low const, versatility, and durability. Due to infrastructure developments and mushrooming population worldwide, it is one of the most versatile and heterogeneous construction material ever discovered. In cement industries, continuous attempts are being made (i)to reduce the cost of production of Portland cement, (ii) to reduce the consumption of the raw materials, (iii) to protect the environment and (iv) to enhance the quality of cement. One way is to use certain low cost materials for partial replacement of Portland cement clinker. Low cost materials used are industrial and agricultural by-products (wastes). Mixture of Portland cement and the above by-products are known as 'blended cements' or 'composite cements'. By definition blended cements are hydraulic binders in which a part of Portland cement is replaced by other hydraulic or non-hydraulic materials. Their general behaviour is quite similar to that of Portland cement since they harden when mixed with water and form the same hydration products.

II. LITERATURE REVIEW

Ernesto Villar (2010)- was represents a characterization and study of the pozzolanic behavior between calcium hydroxide(CH) and bamboo leaf ash (BLA), which was obtained by calcining bamboo leaves at 600°C for 2 h in a laboratory electric furnace. To evaluate the pozzolanic behavior, conduct ometric method was used, which is based on the measurement of the electrical conductivity in a BLAsh/CH solution with the reaction time. Later, the kinetic parameters are quantified by applying a kinetic-diffusive model. The kinetic parameters that characterize the process (in particular, the reaction rate constant and free energy of activation) were determined with relative accuracy in the fitting process of the model. The pozzolanic activity is quantitatively evaluated according to the values obtained of the kinetic parameters. The results show that this kind of ash is formed by silica with a completely amorphous nature and a high pozzolanic activity. The correlation between the values off green energy of activation and there action rate constants are in correspondence with the theoretical studies about the rate processes reported in the literature.

Massazza.F (1979) was identified the structure complexity and the wide variability of chemical and mineralogical composition of pozzolanas justify the difficulties which arise in establishing genera lvalidity relations between chemical and physical characteristics and activity of pozzolanas. Singh et al (2000) discussed that ecofriendly composite cements may be obtained by partial replacemen of Portland cement with certain low cost materials. They studied the

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, April 2022
Impact Factor: 6.252

hydration of bamboo leaf ash in a blended Portland cement. It was concluded that bamboo leaf ash is an effective pozzolanic material. When 20 wt.% of bamboo leaf ash was mixed with PPC the compressive strength values of mortars at 28 days of hydration were found to be quite comparable to those of PPC.

Morton,1997; Hartman et al,(1981)-papaya has always held an attraction of people and there is great economic importance to tropical regions where it is widely grown for edible fruit latex. the cluster of leaves at the apex and along the upper part of the stem makes up the foliage on the tree.

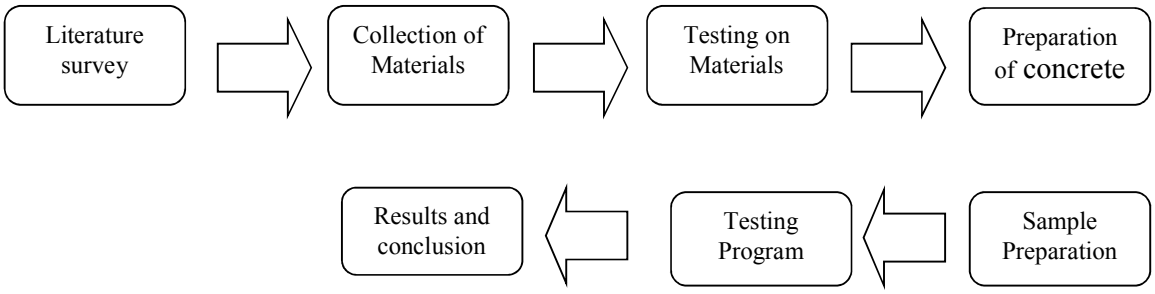
Emeka and Aderinlewo (2016) investigated the geotechnical properties of lateritic soil stabilized with banana leaf ash. They carried out preliminary soil tests (natural moisture content, specific gravity, and Atterberg limit) on the natural soil sample collected from the Federal University of Technology, Akure (FUTA), Nigeria and Engineering tests such as compaction, California bearing ratio, and unconfined compressive strength tests were also performed on the lateritic soil at their natural and stabilized states up to 10% banana leaf ash content by weight of the dry soil. Result of the strength tests showed that the banana leaf ash enhanced the strength of the lateritic soil. The unsoaked CBR and unconfined compressive strength values improved at 4% banana leaf ash. However, they concluded that banana leaf ash satisfactorily acted as cheap stabilizing agents for sub grade purposes.

III. Conclusion On Literature Review

In the literature survey conclude that the effect of different proportion of ashes & test results showed that the compressive strength increase with an increase in the amount of bamboo leaf ash and pawpaw leaf ash upto 20% replacement in concrete & the percentage of ash used for replacement were (0%,5%,10%,15%,20%) by weight of fine aggregate.

The strength of OPC with pawpaw leaf ash binary blended cement concrete is higher than that of the control at 90 days of curing for 5-105 replacement. The compressive strength of concrete decreases with increase in percent of bamboo leaf ash.

IV. Methodology



V. References

[1]. Chao-Lung, H., Anh-Tuan, B. and Chun-Tsun, C. 2011. Effect of rice husk ash on the strength and durability characteristics of concrete. Construction and Building Materials, 25(9): 3768–377

[2]. Bello, A. 2007. Geotechnical Evaluation of some Lateritic Soils as Foundation Materials in Ogbomoso North Local Government Area Southwestern Nigeria. Science Focus, 12(2): 70- 75.

[3]. Bello, A. and C. Adegoke. 2010. Evaluation of Geotechnical Properties of Ilesha East Southwest Nigeria's Lateritic Soil. Pacific Journal of Science and Technology. 11(2): 617-624.

[4]. Bello, A., Ige, J. and Tajudeen, S. 2007. Geotechnical Characterization of Lateritic Soils in parts of Ejigbo Local Government Area, South western Nigeria. LAUTECH Journal of Engineering and Technology, 4(2): 34-38.

[5]. Akinwumi, I. and Aidomojie, O. 2015. Effect of corncob ash on the geotechnical properties of lateritic soil stabilized with Portland cement. International Journal of Geomatics and Geosciences, 5(3):375-392.

[6]. Amu, O. and Babajide, S. 2011. Effects of bamboo leaf ash on lime stabilized lateritic soil for highway construction. Research Journal of Applied Sciences, Engineering, and Technology, 3(4):278–283.

[7]. Ernesto Villar (2010)- was represents a characterization andstudy of the pozzolanic behavior between calcium hydroxide(CH) and bamboo leaf ash (BLA), which was obtained by calcining bamboo leaves at 600oC for 2 h in a laboratory electric furnace.

IJARSCT
ISSN (Online) 2581-9429
International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)
Volume 2, Issue 2, April 2022
Impact Factor: 6.252

[8]. Massazza.F (1979)- Singh et al (2000) discussed that ecofriendly composite cements may be obtained by partial replacement of Portland cement with certain low cost materials

[9]. Morton,1997; Hartman et al,(1981)-papaya has always held an attraction of people and there is great economic importanc to tropical regions where it is widely grown for edible fruit latex. the cluster of leaves at the apex and along the upper part of the stem makes up the foliage on the tree.

[10]. Emeka and Aderinlewo (2016)-They carried out preliminary soil tests (in Federal University of Technology, Akure (FUTA), Nigeria and Engineering tests such as compaction.