

A review of agro-potential waste as a constituent in railway sleepers

S.C. Khong^a, J.J. Yee^a, S.I. Doh^a, S.C. Chin^{a b}

^a Faculty of Civil Engineering Technology, Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia

^b Centre for Research in Advanced Fluid and Processes (Fluid Centre), Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia

ABSTRACT

Historically, concrete was used exclusively for building construction. Concrete has recently found application in the railway business, notably in the construction of concrete railway sleepers. Concrete is made up of three primary ingredients: fine aggregates, coarse aggregates, and cement. To enhance the qualities of concrete, research was conducted on the possibility of substituting wastes from other industries for the ingredients of concrete. With agriculture being one of Malaysia's main industries, ranking third in terms of national economic activity, it demonstrated the potential for using agricultural wastes as ingredients of concrete manufacturing (fine aggregate, coarse aggregate, and cement). While the characteristics of agricultural waste-derived concrete have improved, research on their use as concrete railway sleepers remains uncommon. As such, this article will examine the feasibility of incorporating agricultural waste into concrete for the manufacturing of concrete railway sleepers.

KEYWORDS

Agro-waste; Cement; Coarse aggregates; Concrete railway sleepers; Fine aggregates

ACKNOWLEDGEMENTS

This research did not receive any specific grant for funding agencies in the public, commercial, or not-for-profit sectors.