ABSTRACT

Maize cobs are a non-biodegradable waste material produced in large maize producing and milling zones. Most maize farmers have lacked appropriate ways to dispose this waste since it non-biodegradable, thus making it an environmental hazard. Due to this cause, scientists, engineers and researchers have realized that the maize cobs can be a very efficient material in the construction industry due to its pozzolanic and binding effect.

This research project entailed the use of maize cob ash as a stand-alone stabilizer for the sub-base layer in road construction, as commercial stabilizers such as lime and cement increase the cost of road construction. The compaction, CBR and Atterberg limit tests were done for both neat and maize cob ash mixes, in various percentages. The optimum moisture content was at first determined from the neat samples after which the samples with percentage maize cob ash content varied from 2%, 4%, 6% and 8% of the mass of the lateritic gravel soil. These range of percentages were chosen as they represent a set of incremental steps for assessment on the effects of MCA in lateritic soil and they are easy to work with.

From the results, CBR slightly increased from 25.9% to 27.83% at 6% MCA addition but started dropping slightly at 8% MCA, plasticity index decreased slightly from 22 to 18 and linear shrinkage decreased as well from 9% to 7%. From these results, maize cob ash slightly improved the lateritic gravel soil properties, however, it does not satisfy to be used as a stand- alone stabilizer according to the Road Designer's Manual part III.

The use of maize cob ash in combination with other commercial stabilizers in road construction should be highly considered because it will save on the cost of the road construction and at the same time improve environmental sustainability while it's being disposed of appropriately.

More innovations and research can be done in order to come up with more appropriate findingsin the use of maize cob ash in soil improvement technology and in road materials.