

5. CONCLUSIONS

From the results of tests conducted and discussed above, the following discussions are made:

The ISS stabilizer mixed with black cotton soil turns the alkaline soil into an acidic medium thereby increasing the chances of ionization of the water in the voids of the soils and enhancing the cation exchange with cations contained in the soil.

The improvement of the properties of the black cotton soil falls below the specifications required of a material for road base construction. CBR increased by 9.5% for 1ml ISS content, by 24.8% for 2ml ISS content and by 34.2 with the addition of ISS dosage of 3ml. The CBR at zero ISS content was 37.7%. The plasticity index at zero ISS content was 17.36% and increased to 20.21% at 3ml ISS content.

Both the increases in redox potential and electrical conductivity recorded was expected to cause greater ionization and cation exchange capacity but did not translate into consistent increase in the strength and engineering properties of the black cotton soil.

Stabilized black cotton soil with ISS could be used for fill and sub base materials in road construction. An optimum dosage of 1.5ml of ISS dosage could be used to stabilize the sub base material. 1ml of ISS dosage could be used in treating the black cotton soil to make it useful for fill materials in road construction.

Further tests can also be made to clarify the erratic behaviour of the black cotton soil with ISS as found in this study.

AUTHORS' CONTRIBUTIONS

Author LFO designed the study, collected samples from the field and performed the laboratory tests, and produced a draft of the manuscript. Author HMA checked the data for validity and carried out the analyses of the study. Author HMA further managed the literature searches. Both authors read and approved the final manuscript.

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Alhassan and Chukwuma (2013)

Note: Arrange References in Alphabetical order