

# **Bio-viability on Restored Open Pit with Coal Ash Aggregate Amendment**

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## **ABSTRACT**

The main goal of this study was to investigate bio-viability on the coal ash aggregates (CAA)-amended restoration of open pits. The target field site is planned to be used as an agricultural land after restoration. To this end, a lab-scale study was conducted to evaluate multiple amendment factors on their effects on the germination rate and growth of the plants. Generally, beans germinated and grew much better than pumpkins during the period of the experiment (2 weeks). Between two backfilling modes, a layered mode showed better results than a mixed mode. Regardless of the seed type, better results were observed with a greater depth of the top soil for a layered backfilling mode and a higher ratio of the top soil to the CAAs for a mixed mode. Both plants also showed better results when their seeds were planted into the system that had more top soils than the CAAs. It was suspected that a physical hindrance due to the presence of the CAAs occurred, thereby poorer germination and growth patterns for the mixed backfilling mode and the more CAA ratio in the layered mode. An additional experiment was, therefore, conducted to disclose this suspicion. However, better and healthier growth of the plants was observed in the systems where the roots were contacted to the aggregates due probably to fertilizer effects by the aggregates.

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