

The effects of rock dust on soil microbial activity: a study from the urban gardens of Kisumu, Kenya and Ouagadougou, Burkina Faso

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As part of an interdisciplinary project aimed at empowering women food entrepreneurs in urban areas in the developing world we studied the potential for rock dust in agriculture to be used in addition to compost or manure. Rock dust from local quarries can serve as a source of primary minerals and (micro)nutrients in order to restore soil fertility. Though earlier research on rock dust has been ambiguous it is seeing increasing use in organic agriculture. In this study we aim to explore rock dusts as cheap and sustainable slow release fertilizer/soil conditioners, potentially to be used in concert with compost, in the urban gardens of Kisumu, Kenya and Ouagadougou, Burkina Faso. We did an incubation study to explore the effects of rock dust on the productivity of the soil microbial community. The incubation study involved soil from an urban garden in Kisumu which was gathered from the topsoil and homogenized. The soil was then treated with one of four different rock dusts from either Kenya or Burkina Faso, a locally produced compost, an NPK, or a combination of rock dust with compost and/or NPK. CO_2 output of the treated soil was monitored by respicord and measurements were taken every hour for a period of approximately 3 months. Initial results show that CO_2 output was significantly higher when the soil was treated with locally sourced rock dust in comparison with other treatments, including the rock dust from Burkina and the locally produced compost. These results may indicate that the home field advantage is one of the leading factors determining the success in the application of rock dust; meaning that the soil microbial community is adapted to eroding and weathering rocks from local sources and will process these preferentially to other sources of nutrients. A second incubation study was done in the same manner with soil from an urban garden in Ouagadougou, the results of which may give further support the home field advantage theory.