

## **Maize grain yield as affected by the severity of soil erosion under semi-arid conditions and granitic sandy soils of Zimbabwe**

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### **Abstract**

Soil erosion results in soil degradation through loss of topsoil and organic matter, coupled with loss of plant nutrients. This generally results in yield decline but the relationship between land degradation and subsequent yield decline is still very unclear. To assess this relationship maize was grown on field plots, which were excavated to different depths to represent the erosion levels ranging from 1 (no erosion) to 5 (severe erosion). The plots were further split to allow for two fertiliser levels. Maize yields declined significantly at  $P < 0.001$  with increase in erosion. Under normal fertiliser, maize grain yields declined at  $131 \text{ kg ha}^{-1}$  for every cm of soil depth lost while under double fertilised plots the decrease was  $158 \text{ kg ha}^{-1}$ . Using increased fertiliser amounts only yielded benefits on uneroded and slightly eroded soils, after which there was no yield benefit. This study proved that soil erosion, under granitic sandy soils, results in the decline of soil productivity and that fertilisers cannot mask these effects after  $\sim 10$  cm of topsoil have been lost. It is therefore, important to conserve the soil, as redressing the effects of erosion using fertilisers can be very costly but still remain ineffective.