

Changes in Soil Structural Stability Induced by Cultivation of *Jatropha curcas* L. on an Eroded Entisol in India

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ABSTRACT

Amelioration of the structural integrity of any soil is critical to any restoration programme in dry land degraded ecosystem. Land restoration itself is a necessary development strategy in order to reduce or reverse environmental degradation and to protect the ecosystem. The objective of this study was to assess the possibility of cultivating *Jatropha curcas* L. (a bio-energy crop) with or without amendment to improve the structural stability of an eroded, unproductive soil in western India. Here, we compare soils cultivated to *Jatropha curcas* with those under native vegetation of *Zizyphus mauritania*. Wet and dry-sieving methods were used to determine aggregate size distribution and mean weight diameter, as indices of soil aggregate (structural) stability. The fraction of dry aggregate size distribution (DASD) and water – stable aggregates for all the treatments were significantly different for macro and micro aggregate size classes. Data showed improvement in aggregate stability ranging from 0.3 – 35% over the native vegetation. Addition of high dose of nitrogen and phosphorus fertilizers reduced significantly, the aggregate stability of these soils. Establishment of plantations of *Jatropha curcas* L. has high potential for improving soil structural integrity of eroded dry land.