

Crops can be irrigated with lime-treated acid mine drainage

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Abstract

The possible use of lime-treated acid mine drainage (AMD) for irrigation of agricultural crops was investigated. A field screening trial of 20 agronomic and pasture crop species was established at Landau Colliery Kromdraai Opencast Section (near Witbank, Mpumalanga Province), on a sandy acid soil. The objectives were to monitor crop response to sprinkler irrigation with lime-treated AMD and changes in soil chemical properties due to irrigation with this saline (gypsiferous) water. Considerable increases in yield of irrigated crops were observed, compared with rainfed cropping. Shallow rooting depths were, however, recorded for most crops, possibly due to high soil acidity, soil compaction and P deficiency in deeper layers. No symptoms of foliar injury were noted. Fluctuations in soil salinity levels were recorded depending on rainfall pattern, whilst soil pH(H₂O) increased after three years of irrigation. Lime-treated AMD could be an additional resource in mining areas, provided that irrigation and fertilisation practices are managed correctly.