

Monitoring Land Use Change with Landscape Function Analysis

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Landscape Function Analysis (LFA) is a monitoring tool that can be used to rapidly obtain the functional status of a soil landscape. The method was originally conceived to be used for monitoring the effects of stress and disturbance on landscapes and particularly following the rehabilitation of semi-arid landscapes or minesite rehabilitation. More recently LFA has been used in more temperate regions under a range of land uses.

LFA is underpinned by a conceptual framework, uses a comprehensive field methodology and provides an interpretational framework. The conceptual framework is based on the trigger, transfer, reserve, pulse (TTRP) model that refers to landscape characteristics and processes that influence the distribution and retention of resources within a landscape. The field methodology involves the establishment of transects and recording site description. It relies on prescribed landscape organization parameters and the recording of eleven soil surface assessment (SSA) indicators. SSA scores are entered into a spreadsheet that provides results for three landscape function indices based on soil functions of soil surface stability, infiltration capacity and nutrient cycling potential.

Two case studies have been used to show that LFA can be used to effectively monitor and explain changes to soil functionality following land use change activities. The first examines restoration of degraded scaled soil in the semi-arid rangelands of NSW. The second involves examination of soil functionality following afforestation of grazing pastures in the temperate region of NSW. The results of these studies show that restoration leads to improvement in the stability, infiltration and nutrient cycling processes.

Reference:

Tongway, D.J. & Hindley, N.L. 2005. Landscape Function Analysis: Procedures for monitoring and assessing landscapes with special reference to minesites and rangelands. CSIRO Sustainable Ecosystems, Canberra, Australia