



Soil development and position locking: an analysis from an Australian dryland banded plant community.

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Many models exploring the development of banded patterning in dryland vegetation suggest that there is continual upslope migration of the pattern. From a few simple considerations, this seems plausible. Moisture availability is greatest near the upslope margin of groves, and least near the downslope margin. Additionally, water pools ephemerally in the lowermost intergroves. However, the lowermost intergroves are locations of sediment deposition, and the continued accumulation of silt, clay, and precipitates there results in very high bulk density, high soil shear strength, and prominent moisture sealing at the soil surface. Soil infiltrabilities are very low, and these are typically the driest soils in the patterned landscape. Conditions for plant colonisation are severe. It is argued here that following the differentiation of soil conditions in the lowermost intergroves, no upslope colonisation by grove vegetation is possible. This hypothesis is examined from more than a decade of photography at benchmarked grove boundaries at an Australian dryland site. The results confirm that the vegetation boundaries have remained at fixed locations through both wet and dry years.