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# Woody Plant Encroachment Effects on the Physical Properties of Vertic Soils in Bela-Bela, Limpopo Province

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**Abstract :** Woody plant encroachment, a land cover transformation that reduces grassland productivity may influence soil physical properties. The objective of the study was to determine the effect of woody plant encroachment on physical properties of vertic soils in a savanna grassland. In this study, we quantified and compared soil bulk density, aggregate stability and porosity in the top and subsoil of an open and woody encroached savanna grassland. The results revealed that soil bulk density increases, while porosity and mean weight diameter decreases with depth in both open and woody encroached grassland soil. Compared to open grassland, soil bulk density was 11% and 10% greater in the topsoil and subsoil, while porosity was 6% and 9% lower in the topsoil and subsoil of woody encroached grassland. Mean weight diameter, an indicator of soil aggregation increased by 38% only in the subsoil of encroached grasslands due to increasing clay content with depth. These results suggest that woody plant encroachment leads to compaction of vertic soils, which in turn reduces pore size distribution.

**Keywords :** soil depth, soil physical properties, vertic soils, woody plant encroachment
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