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Managing regrowth of an indigenous savanna tree species (*Terminalia sericea*) for fuelwood: the influence of stump dimensions and post-harvest coppice pruning

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Abstract

Most African savannas are subjected to harvesting of wood, especially for fuelwood, charcoal and construction timber. A key attribute of the resilience and productivity of savannas is the ability of damaged trees to regrow from the remaining stump. Survival of the cut stem and growth rate of the resultant coppice shoots is influenced by several factors, including size of the tree, cutting height and the root/shoot ratio after felling. Some of these can be manipulated to maximise subsequent regrowth, but this is little understood for most African savanna species. This study investigated the influence of original tree size, height of cut and post-harvest pruning on regrowth of *Terminalia sericea*. Regrowth was monitored as the number of coppice shoots, the mean coppice shoot length and the cumulative coppice shoot length per cut stump over four growing seasons. There was a positive relationship between cutting height and number of coppice shoots, but height of cut did not significantly affect mean or cumulative coppice shoot length. Larger stems produced more coppice and had greater mean and cumulative coppice shoot lengths than smaller stems. Post-harvest pruning increased the mean shoot length, but not the cumulative shoot length. After four growing seasons mean shoot length for the single shoot pruning treatment (one shoot left) was 54% greater than for the no-prune treatment, whilst the double shoot pruning (two shoots left) was 40% greater. Extrapolated harvest intervals for fuelwood poles were 3–4 years for large stems, 4–5 years for medium-sized stems, and 4–9 years for small stems.

Keywords: Coppice regrowth; Cutting height; Pruning; Rotation period; Tree size

1. Introduction

Fuelwood is the primary energy source for the majority of rural communities in South and southern Africa [1]. Most of the biomass used for fuel is harvested from natural forests and woodlands, although exotic species may be used in areas of low indigenous biomass. In South Africa almost 70% of rural households reside in the savanna biome, which comprises approximately 34% of the country [2]. The high pressure on indigenous woodlands for fuelwood and construction timber has led to areas with localised shortages of fuelwood [3,4], although at a national scale, sustainable supply has the potential to meet national demand [5].

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