DECLARATION

I declare that the mini-dissertation hereby submitted to the University of Limpopo, for the degree of Master of Science in Agriculture (Horticulture) has not previously been submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

ME Maudu (Mr.) — **10 August 2010**

Initials & Surname (Title) — **Date**

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ABSTRACT

Bush tea (*Athrixia phylicoides* DC.) has received interest as another indigenous South African herbal tea with potential for commercialization. The success of commercialization of bush tea hinges on maintenance or enhancement of quality of bush tea as a herbal beverage. Herbal tea quality is one of the critical factors in commercialization that would determine the price of tea for local sale and export. A research was conducted to determine chemical profiles of bush tea at different phenological stages and as influenced by pruning and application of growth regulators.

A trial to determine the quality of tea harvested at various phenological stages (namely new growth, older growth and whole plants) from wild and cultivated bush tea was conducted. This was to help determine the best phenological stage to harvest bush tea of best quality. In cultivated bush tea, harvested new growth or as whole plants proved to be of higher quality owing to their higher polyphenol and tannin attributes respectively. In wild bush tea, both new and older growth proved to be of good quality owing to the higher total polyphenol content and higher total antioxidants, respectively.

A trial to determine the effect of pruning at different heights on growth and quality of bush tea was also conducted. Pruning of bush tea largely led to yield reduction. Unpruned tea plants remained the tallest plants, with higher number of branches, bigger leaf area and a larger biomass than apically, middle and base pruned bush tea plants. Pruning at different heights also proved to have little or no effect on quality of bush tea. While only total polyphenols remained higher in unpruned tea plants, no significant differences were observed in tannin and total antioxidant content in unpruned, apically, middle and base pruned tea plants.

A third trial was conducted to investigate the effects of gibberellins on sprouting and quality of bush tea. The trial results showed that gibberellin application had a

favourable effect on growth of bush tea, with application of 3% and 4% yielding the highest growth. The results also indicated a declining total polyphenol and antioxidant content with increasing gibberellin application rate, while tannins peaked at 2% application rate.

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