

Full Length Research Paper

Lantana camara* and *Tithonia diversifolia* leaf teas improve the growth and yield of *Brassica napus

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Vegetable production is an economically viable enterprise in Zimbabwe. The most commonly grown leafy vegetable is *Brassica napus* (rape). The productivity of this vegetable is affected by poor soil fertility, with nitrogen being the most limiting nutrient. An experiment was carried out to evaluate the use of two invasive weeds *Lantana camara* and *Tithonia diversifolia* as leaf teas on harvestable biomass production of rape. The experiment was laid out as a randomized complete block design with six treatments that included different leaf tea concentrations. Leaf length was shortest (12.11 cm) on rape that did not receive any fertilizer application but was similar for all other treatments. Leaf widths of rape treated with leaf teas were not significantly different at three weeks after transplanting. At four weeks after transplanting, rape fertilized with ammonium nitrate and *T. diversifolia* (7.5 ℓ/week) had longest leaves. At five weeks after transplanting, rape that did not receive any fertilizer had the shortest leaves (12.79 cm) while ammonium nitrate gave the longest leaves. Highest rape fresh weight was from *T. diversifolia* (7.5 ℓ/week) and AN treatments. Treatments that did not receive any fertilizer consistently produced the lowest leaf length, width and fresh weight. The study showed that yield of rape from application of *T. diversifolia* (7.5 ℓ/week) was comparable to that of ammonium nitrate. Also, it is better to apply leaf teas than not to apply anything at all. Resource poor farmers who cannot afford to buy synthetic fertilizers could boost their rape production by using these leaf teas, and at the same time decelerate the spread of these weeds.

Key words: *Brassica napus*, leaf tea, *Tithonia diversifolia*, *Lantana camara*, smallholder farmer.

INTRODUCTION

In Zimbabwe, smallholder vegetable production is a fast growing enterprise due to increased vegetable demand from the rapidly growing urban population (Kuntashula et al., 2004; Chandiposha, 2007) and boarding schools. *Brassica napus* (rape) is one of the most commonly grown leaf vegetables (Turner and Chivinge, 1999). The vegetable is a cool season crop and its production is normally during the time of the year when temperature is low especially in autumn, winter and spring. However, poor soil fertility is one of the major biophysical constraints to increased productivity where nitrogen and phosphorus are the most severely depleted nutrients in many soils especially in sub-Saharan Africa (Sanchez et

al., 1989; Sanchez, 1999; Jama et al., 2000). Compared to cereals, rape requires a higher amount of nutrients and available nitrogen (Rathke et al., 2005). Yield and nutrient uptake are highly dependent on nitrogen (N) fertility and peak yields occur with 120 to 180 kgN/ha (Jackson, 2000). As observed by Gachengo et al. (1999), the use of commercial fertilisers for vegetable production has generally been restricted to only a few farmers endowed with resources and high off-farm income. Inorganic fertilisers such as ammonium nitrate (AN) are at times inaccessible to smallholder farmers leading to reduced application rates or nothing being applied at all. Consequently, these farmers resort to use of traditional

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