1. TITHONIA DIVERSIFOLIA

Farmers' preferences

A study by Kiptot (2008) on adoption dynamics of *Tithonia diversifolia* for soil fertility management in Western Kenya indicates that farmers plant tithonia on farms instead of relying on the ones found along roadsides and farm boundaries. The common planting practice used by farmers is to plant tithonia along contours in the cropland to serve the dual purpose of controlling soil erosion and providing leafy biomass for soil fertility replenishment.

Extent of adoption

The same study by Kiptot 2008, indicates that 58% of farmers have planted *T.diversifolia* in an area of Siaya district and 13% have planted in an area of Vihiga district. The difference is attributed to farm size; farmers in Siaya have a larger land size compared to Vihiga. The study also shows that the majority of farmers in Siaya district (52%) were considered to be adopters in comparison to 8% in Vihiga district. Vihiga district had more non-adopters (60%) than Siaya district (20%) (Table 1). Among the adopters 100% said they adopted tithonia because it increases crop yields.

Table 1: Farmers' adoption status for Tithonia in December 2004.

	Siaya (n=60)	Vihiga (n=60)
Status	% of farmers	
Non-adopters	20	60
Adopters	52	8
Dis-adopters	3	5
Testers/ rejecters	17	16
Re-adopters	8	11

Source: Kiptot 2008 (NB: Adoption is a continuous process with farmers falling into different categories over time)

A study by Mugwe et al (2009) on adoption potential of measures that improve soil fertility in the Central highlands of Kenya indicates that farmers in the survey area of Meru had 51 tithonia shrubs per farm.

Economics of production

Mugwe (2009) found out that manure + 30 kg N /ha was the most profitable treatment for improving maize yields, earning a net benefit of USD 938.8, followed by Tithonia+ 30 kg N with USD 795. The sole applications of tithonia gave lower net benefits of USD 304 (Table 2).

Table 2: Net benefit, Benefit-cost ratio (BCR) in USD during 2003 Long Rains inn Chuka, Meru, Kenya

Treatment	Net benefit (USD)	BCR
Manure + 30 kg N/ha	938.8	2.5
Tithonia	304.3	1.8
Tithonia+ 30 kg N/ha	795	2.2
Calliandra+ 30 Kg N/ha	337.4	1.2

Leucaena+ 30 kg N/ha	462	1.8
Fertilizer @ 60 kg N/ha	360	1.3

Source: Mugwe et al 2009

Mugwe (2009) indicates that cattle manure and tithonia were found to be the organic materials with the highest adoption potential for soil fertility improvement. They gave the highest yields and were the most profitable.

Gachengo et al (1999) studied tithonia green manures as sources of phosphorous for maize in western Kenya and found that maize yield increased up to 200% following application of tithonia biomass.

Further reading

Gachengo, C. N., Palm, C. A., Jama, B. and Othieno, C. (1999). Tithonia and Senna green manures and inorganic fertilizers as phosphorous sources for maize in western Kenya. *Agroforestry Systems* Vol. 44 pp.21–36.

Kiptot, E.(2008). Adoption dynamics of Tithonia Diversifolia for soil fertility management in pilot villages of Western Kenya. Experimental Agriculture Vol. 44 pp.473-484.

Mugwe, J. et al (2009) Adoption potential of selected organic resources for improving soil fertility in the central highlands of Kenya. *Agroforestry Systems* Vol. 76 pp. 467-485