1. FAIDHERBIA ALBIDA

Farmers' preferences

Phombeya (1999) studied farmers' perception of the value of *Faidherbia albida* trees in the farming system in Malawi.The study indicates that 95% (285) of farmers interviewed (300) said maize yields are generally higher under *F. albida* canopies than where there are no trees.

Extent of adoption

Phombeya (1999) found that 97% (291) of the respondents had faidherbia trees on their farms. Out of the 97%, 77% (220) did not apply mineral fertilizer to their crops. The study also found out thatthe majority of those who had already planted faidherbia were willing to plant even more trees.

Economics of production

A study by Dewees (1995) on private investment, public policy, and farmer choice fn trees on farms in Malawi, gives estimated costs and benefits of planting faidherbia to improve crop yields (Table 1). The principal costs which farmers bear are establishment costs. It was assumed that a farmer would plant 100 seedlings. The least productive seedlings would be thinned out over the next several years, leaving a stand of 25 trees per ha. It was also assumed that benefits accrue slowly for the first five years, more quickly between the 5^{th} and 15^{th} year and more slowly until the trees reach maturity by 25^{th} year.

Table 1: Cost and benefit stream for planting Faidherbia albida and intercropping with local varieties of maize per ha

Year	Tree management costs	Maize yields (kg/ha)	Incremental benefits	Incremental costs	Net benefits or costs
1	6.64	850.00	0.00	6.67	-6.67
2	0.73	851.00	0.00	0.67	-0.67
3	0.73	851.00	0.22	0.67	-0.67
4	0.73	852.00	0.22	0.67	-0.44
5	0.73	854.00	0.44	0.89	-0.22
6		856.00	0.67	0.00	0.67
7		860.00	1.11	0.22	1.11
8		865.00	2.00	0.22	1.78
9		873.00	2.89	0.22	2.67
10		884.00	4.22	0.44	3.78
11		898.00	6.00	0.67	5.33
12		914.00	8.00	0.89	7.11
13		929.00	9.78	1.11	8.89
14		943.00	11.56	1.11	10.44
15		954.00	12.89	1.33	11.56
16		962.00	14.00	1.33	12.44
17		968.00	14.67	1.56	13.11
18		971.00	15.11	1.56	13.56
19		974.00	15.33	1.56	13.78
20		975.00	15.56	1.56	14.00
21		976.00	15.78	1.56	14.00
22		977.00	15.78	1.56	14.22

23	977.00	15.78	1.56	14.22
24	977.00	15.78	1.56	14.22
25	977.00	15.78	1.56	14.22
26	977.00	15.78	1.56	14.22
27	977.00	15.78	1.56	14.22
28	977.00	15.78	1.56	14.22
29	977.00	15.78	1.56	14.22
30	977.00	15.78	1.56	14.22

Source: Dewees 1995

By the time the trees were fully mature in the 25th year, however, it was assumed that yields of local maize varieties would be increased by 15% , over initial yields of 850 kg per ha. Yield benefits would slowly accrue during the first five years, more quickly accruing between the fifth and 15th years, and then slowing down again from the 15th year. It was estimated that half of the yield increases would be felt by the 12th year.

Further reading

Dewees,P. (1995). Trees on Farms in Malawi: Private Investment, Public Policy and Farmer Choice, World Development, Vol. 23, No.7, pp 1085-1102.

Phombeya, H.K. (1999). Farmers' Perceptions of the Value of faidherbia albida Trees in the Farming System (Survey). In Nutrient Sourcing and Recycling by Faidherbia albida Trees in Malawi. PhD Thesis, University of London.

2. LEUCAENA TRICHANDRA

Extent of adoption

A study by Mugwe et al (2009) on adoption potential of resources that improve soil fertility in Central highlands of Kenya indicates that farmers in the survey area of Meru had 139 *Leucaena trichandra* trees per farm.

L.trichandra is widely grown as a fodder shrub in central Kenya. Acharya et al.(2010) reported that over an 11 month period between June, 2006 to April, 2007, 25 seed dealers in Kenya sold 862 kg of *L. trichandra* seed and 126,000 seedlings, sufficient for about 25,000 farmers to plant.

Economics of production

Mugwe (2009) found that manure + 30 kg N /ha was the most profitable soil fertility treatment tested, followed by tithonia+ 30 kg N, then by leucaena+ 30 kg N (Table 1).

Table 1: Net benefit, Benefit-cost ratio (BCR) in USD during 2003 Long Rains in 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

Further reading

Acharya K, Booth E, Wambugu C, Karanja E, Arimi H and Bender S. (2010). How can Systems Thinking, Social Capital and Social Network Analysis help Programmes Achieve Impact at Scale? Results of a Demonstration Project in the Kenyan Dairy Sector. ICRAF Working Paper no. 116. Nairobi, Kenya: World Agroforestry Centre.

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