

GREVILLEA ROBUSTA

Farmers' preferences

Tefera et al (1999) carried out a study on evaluation of *Grevillea robusta* in boundary plantings in semi-arid Kenya. The study found that farmers preferred *G. robusta* for planting with crops as it was a relatively fast growing species and did not compete too much with other crops for water.

Franzel et al (1995) studied farmer participation in on-station trees species selection for agroforestry in Burundi. The study found out that grevillea is the second most preferred species after *Maesopsis eminii*. Farmers are also willing to test grevillea on their own farms.

The study also looked at how the farmers rated the species on criteria concerning management, growth and uses. Grevillea was ranked as the most compatible with other crops; it was ranked second in the speed of growth and third in straightness (Table 1).

Table 1: Farmers' mean ratings*, using the bao game, of selected species across criteria considered important to them.

Species	Management and growth			Use of Timber		Use of firewood	
	Compatibility with crops	Speed of growth	Resistance to insects	Wood Appearance	Straightness	Quick in drying	Durability of fire
<i>Maesopsis eminii</i>	3.8	4.7	4.2	4.8	4.2	3.1	3.5
<i>Cedrela serrata</i>	4.6	4.3	4.5	5.0	-	-	-
<i>Grevillea robusta</i>	4.9	4.6	2.5	2.6	4.1	3.2	2.8
<i>Casuarina cunninghamiana</i>	1.0	2.2	4.2	4.1	3.9	3.0	3.8
<i>Markhamia lutea</i>	3.7	1.9	4.5	4.3	1.8	2.3	4.2
<i>Eucalyptus</i> spp**	1.1	4.3	4.0	2.5	3.6	4.7	5.0
<i>Cupressus lusitanica</i>	1.0	3.2	4.5	4.6	3.9	4.6	3.5
<i>Albizia chinensis</i>	4.0	3.5	1.3	-	1.3	2.3	3.3

Source: Franzel et al 1995

Twenty-five persons were interviewed; the number rating a specific species on a particular criterion varies from 5 to 20. For some species certain criteria are irrelevant e.g., *C. serrata* is never used for firewood, and *A. chinensis* is never used for timber.

* The rating of 1 to 5 refers to the score in number of seeds the farmers gave to a species on a particular criteria. A rating of 5 was considered excellent, a rating of 1, poor.

** Primarily *E. saligna*, *E. maideni*, and *E. camaldulensis*.

Extent of adoption

Hiromi (1999) studied the diffusion process of planting grevillea in rural Tanzania. The study found that grevillea is a highly planted species in Bonga village Tanzania (Table 2)

Table 2: Total number of trees planted by households

Trees species	Boundary	On the farm	Homestead	Total
Grevillea robusta	1,189	503	149	1849
Cassia siamea	124	13	4	141
Cordia africana	22	19	2	43
Comniphora africana	35	-	-	35
Gmelina arbolea	11	12	-	23
Leucaena leucocephala	5	10	3	18

Source: Hiromi 1999

Oginasoko et al (2006) carried out a study on the status of indigenous and exotic species in Eastern and central Kenya and found out that there were about 200 grevillea trees per 0.50 ha. farm in the cotton zone of Meru central district.

Economics of production

A study by Tyndall and Franzel (1998) looked at *G. robusta* as a boundary tree on maize and beans farms in Kirinyaga district Kenya. The net present value was calculated over an 18- year period, discounted at 20% per year. A partial budget analysis was done to compare the additional benefits to additional costs on an hectare of maize and beans with a row of grevillea (Table 3)

Table 3: Partial budget showing net present value of adding a row of grevillea to a 1-ha maize plot (USD, over an 18-year period, discounted at 20% year⁻¹)

Added benefits			Added costs		
	USD ha ⁻¹	%		USD ha ⁻¹	%
Firewood	55.36	53	seedlings, labour for planting, pruning, felling	3.52	6
Poles	18.46	18	yield loss: area occupied by trees	20.98	35
Timber	21.46	21	yield loss: maize field	35.16	59
Inputs saved	8	8	total	59.66	100
Total	103.29	100			
Net present value				43.625	

1 USD= 56 Ksh.

Source: Tyndall and Franzel 1998

Baggio et al (1997) looked at productivity of Brazillian coffee plantations shaded by different stockings of grevillea. He categorized different treatments based on number of trees per hectare in a coffee plantation (Table 5). Results also showed that grevillea is the most suitable species

for coffee shade. It is also another source of income for coffee farmers, through timber and firewood.

Table 5: Estimate of the gross production of the system coffee and *G. robusta* (values in USD per hectare), Parana Brazil

Treatment	I	II	III	IV	V	VI
Tree/ha	119	71	48	34	26	0
Lumber	1,985.5	1,221.0	907.5	742.5	503.3	-
Firewood	63.2	37.8	25.6	18.0	14.0	-
Subtotal	2,048.7	1,258.8	933.1	760.5	517.3	-
Coffee	15,177.6	18,052.0	19,490.2	18,835.3	17,378.8	17,837.8
Total	17,226.3	19,310.8	20,423.3	19,595.8	17,896.1	17,837.8

Source: Baggio et al 1997

A study by Carsan and Holding (2006) on growing farm timber in Meru districts in Kenya, found that grevillea is sold for firewood as whole trees and logs. Grevillea provided a range of flexible uses and therefore yielded the highest returns per household. The total income to the 25 households reporting commercial sales in the last two years was: Ksh 88,255 (USD 1193) equivalent to an average sale of KSh 1,165 (USD 16) per household per year in the survey.

Further reading

Baggio, A.J. et al (1997). Productivity of southern Brazilian coffee plantations shaded by different stockings of *Grevillea robusta*. *Agroforestry Systems* 37: 111–120.

Carsan, S. and Holding, C. (2006). Growing farm timber: practices, markets and policies. The Meru timber marketing pilot programme case studies and reviews. World Agroforestry Centre.

Franzel, S. et al (1995). Farmer Participation in On-station Tree Species for Agroforestry: A case study from Burundi. *Experimental Agriculture*, 31: 27-38

Franzel, S. et al (2002). Farmer-designed Agroforestry Trials: Farmers' Experiences in Western Kenya. In *Trees on the farm: assessing the adoption potential of agroforestry practices in Africa* p.125–143 (Franzel, S. and Scherr, S.J.).

Hiroshi, Y. (1999). The Diffusion Process of Planting *Grevillea Robusta* Among Rural households in North-Central Tanzania. *African Study Monographs*, 20(3): 119-145

Oginosako, Z. Simitu, P. Orwa, C. and Mathenge, S. (2006). Are they competing or compensating on farm? Status of indigenous and exotic tree species in wide agro ecological zones of Eastern and Central Kenya, surrounding Mount Kenya. ICRAF Working paper No. 16. Nairobi: World Agroforestry Centre.

Tefera, A., Rao, M.R. Mathuva, M.N. and Atta-Krah K. (2001). Farmer-participatory Evaluation of *Grevillea robusta* in Boundary planting in semi-arid Kenya. *Forest, Trees and Livelihood* 11: 13-27

Tyndall, B., Franzel, S. (1998). Boundary Plantings of *Grevillea Robusta*: The Adoption of an agroforestry Technology. Paper presented at the National Agroforestry Project Research Symposium, 9-11 December, 1998, Embu, Kenya.

Tyndall, B. (1996). The socioeconomics of *Grevillea robusta* within the coffee land-use system of Kenya. AFRENA Working Paper No. 109. Agroforestry Research Network for Africa, ICRAF: Nairobi.