

## Fodder shrubs: Food for livestock

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Communications Unit

Fodder shrubs were first introduced in the East African highlands in the early 1990s as a solution to a problem that has plagued dairy farmers for generations: the lack of an inexpensive and plentiful source of high-protein animal feed. Providing a reliable form of fodder year-round, they are easy to grow and, by fixing atmospheric nitrogen, improve soil fertility. They can withstand repeated pruning and do not compete with food crops. The plants mature in about twelve months, after which they can be fed to livestock – continuously, for many years.

Most smallholder farms lack good grazing land, and periodic droughts mean raising animals in East Africa is a risky business that can overwhelm even skilful farmers. Fodder shrubs help reduce this risk – they do not involve cash expenditures or require taking land out of production. Rather, they allow farmers to save money that would otherwise have been used to purchase dairy meal. Shrubs are planted along farm and field boundaries, around homesteads, and across contours to help curb soil erosion - making it an appropriate technology for smallholder dairy farmers who are constrained by resource availability, especially land.

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### Research for Development on Fodder Shrubs

Despite the great potential that fodder shrubs offer, knowledge of and access to quality planting materials is a major constraint. Furthermore, institutional mechanisms for widespread adoption are limited. In the early 1990s, ICRAF together with ILRI, the Kenya Forestry Research Institute (KEFRI) and the Kenya Agricultural Research Institute (KARI), tested the appropriate species for different agro-ecological zones, the management and utilization of the fodder shrubs, value adding through leaf meal processing and formulation of home-made feed rations. This research helps smallholder farmers to optimize productivity of fodder shrubs. Research was also conducted on economic returns from feeding dairy animals and on alternative dissemination pathways. Over the years, ICRAF has helped build the capacity of a wide range of partners to promote fodder shrubs: National Agricultural Research Systems (NARS), non-governmental organizations (NGOs), community based organizations (CBOs), private companies, and farmer groups.

Two key projects have supported these efforts:

- Scaling Up the Impact of Fodder Shrubs in East Africa, financed by DFID's Forestry Research Programme, implemented with the Oxford Forestry Institute, and
- SCALE\*, a Tool for Transformational Development, implemented with the Academy for Educational Development (AED), a US-based NGO.

The results of these efforts include:

- 224 organizations in Kenya, Uganda, Tanzania, and Rwanda are promoting or have promoted fodder shrubs; shrubs average 75 to 306 per farmer.
- An estimated 205,000 farmers are growing fodder shrubs. 48% to 59% of these are women.
- Seed sales by private vendors are booming in Kenya.
- In addition to several scientific publications, the research lead to the recent production of a key decision support tool and international public good on fodder shrubs\*\*, which has been disseminated to institutions throughout the region to help increase access to knowledge about the technology option for improved dairy production.

### What is the impact?

- Dairy farmers increase milk production and improve the profitability of their dairy enterprises. In the first year, farmers spend about \$US 11 raising and transplanting the seedlings. Harvesting begins in the second year and each year thereafter, the farmer earns \$US95-122 from increased milk production.
- The shrubs have several additional benefits: firewood, a supply of nectar for honey bees, curbing soil erosion when planted along contours, improving the butterfat content of milk, and significantly reducing the effort needed to collect fodder from distant locations.

Farmer-to-farmer dissemination is a key driving force behind the spread of the practice. Survey results from the four East African countries show that 57% of adopters give out seed and seedlings to an average of 6.3 other farmers. What was most astounding was that 5% of the farmers accounted for 66% of the farmer-to-farmer dissemination.

\* SCALE: System-wide Collaborative Action for Livelihoods and the Environment is a framework, process, set of tools and techniques that catalyze system-wide change and result to more participation and higher adoption of innovations. Thus, its purpose is to broaden the impacts of development. The key principle in SCALE is to start big, understand the larger context of an issue and integrate inter-disciplinary best practices and solutions to a problem or issue into a framework and process.

\*\*Wambugu, C., Franzel S., Cordero, J. and Stewart, J. 2006. *Fodder shrubs for dairy farmers in East Africa: making extension decisions and putting them into practice*. Nairobi: World Agroforestry Centre and Oxford Forestry Institute.

### Additional Reading

— [Fodder shrubs for dairy farmers in East Africa: making extension decisions and putting them into practice](#). Nairobi: World Agroforestry Centre and Oxford Forestry Institute.

- Franzel, S. and Wambugu, C. (2007). *The uptake of fodder shrubs among smallholders in East Africa: Key elements that facilitate widespread adoption*. In: Hare, M.D. and Wongpichet, K. (eds) 2007. *Forages: A pathway to prosperity for smallholder farmers*. Proceedings of an International Symposium, Faculty of Agriculture, Ubon Ratchathani University, Thailand. 203-222.
- Wambugu, C., Franzel S., Cordero, J. and Stewart, J. 2006. *Fodder shrubs for dairy farmers in East Africa: making extension decisions and putting them into practice*. Nairobi: World Agroforestry Centre and Oxford Forestry Institute. 169 pp.
- Stewart, J., Franzel, S., and Wambugu, C. 2006 *Final Technical Report: Scaling up the promotion of calliandra and other fodder shrubs in East Africa*. Phase 2 (2001-2006) of DFID-financed project R6549. Oxford Forestry Institute, Oxford, UK and ICRAF.
- Shelton, H.M., Franzel, S. and Peters, M. 2005. *Adoption of tropical forage legume technology around the world: analysis of success*. In: D.A. McGilloway (ed) *Grassland: a Global Resource*. Wageningen Academic Publishers, Wageningen, The Netherlands pp. 149-166.
- Franzel, S., Wambugu, C., Tuwei, P. and Karanja, G. 2003. The adoption and scaling up of the use of fodder shrubs in central Kenya. *Tropical Grasslands* 37, 239-250