

Integrating tree lucerne into crop-livestock farming systems of the Ethiopian highlands for multiple products and services

Tree lucerne is a nitrogen fixing, fast growing and ecologically adaptable multipurpose plant species that is being evaluated in Africa RISING research sites in Ethiopia.

Integration of tree lucerne in the crop-livestock farming system should contribute to income diversification, improve crop and livestock productivity and enhance the participation of women and children in the research process. Eight research groups have already been formed at the four sites. Each research group comprises 20-30 farmers from various social groups.

Although new to most of them, farmers interest in the crop is increasing in the sites. The number of female-headed households that participated in the tree lucerne research is 19% in Endamehoni and less than 10% in Lemo (Table 1). This does not mean that womens' participation in this research is insignificant. Married women are also very active for managing the plants that are grown around homesteads/backyards (figure 1).



Figure 1. A married woman managing tree lucerne seedlings planted around the homestead in Jawe kebele, Lemo.

Growing tree lucerne can have significant service and production benefits for farmers. For instance, most farmers use crop residues and grasses for animal feed. These feed

sources have low levels of crude protein. The foliage and pods of tree lucerne can be mixed with other feed sources to improve nutritional values for animals. Farmers can also sell tree lucerne seeds to diversify their income. Tree lucerne can benefit both women and men and potentially addresses the needs of various farm types.

Tree lucerne is one of very few leguminous multipurpose plant species that are adapted to the high altitude areas where Africa RISING is operating in Ethiopia. The plant can play a significant role in supporting food security, nutrition and income diversification of smallholder farmers so long as there is technical backstopping on its management and capacity building on integrated agriculture and marketing at all levels (farmers, extension, and research and market actors).



Figure 2. Tree lucerne) on-farm research in Tsibet and Emba Hazti, Endamehoni

Table 1. Participating farmers in tree lucerne research and performance of the plant in different site

	Endamehoni (Tigray)	Lemo (SNNPR)
Number of participating households (Male)	44	99
Number of participating households (Female)	10	8
Maximum number of seedlings provided to a farmer	150	866
Minimum number of seedlings provided to a farmer	25	30
Total number of seedlings distributed	6926	11260
Niches where tree lucerne is planted	Homestead/backyard, farmland (boundary, soil and water conservation structures), irrigated land (boundaries), gullies and miscellaneous land.	Homestead/backyard (fence, small plots) and farmland (around terraces)
Average survival (%) two months after planting	63.5 (Tsibet) and 70.7 (Emba Hazti)	85 (Jawe) and 80 (upper Gana)
Major challenges and lessons	Heavy rainfall (floods, hail and water-logging), low levels of farmers' awareness, shortage of land, free grazing system, nursery site distance.	The plant is new to farmers, young plants are popular by wild and domestic animals, planting space is not maintained by some farmers



The Africa Research In Sustainable Intensification for the Next Generation (Africa RISING) program comprises three research-for-development projects supported by the United States Agency for International Development as part of the U.S. government's Feed the Future initiative.

Through action research and development partnerships, Africa RISING will create opportunities for smallholder farm households to move out of hunger and poverty through sustainably intensified farming systems that improve food, nutrition, and income security, particularly for women and children, and conserve or enhance the natural resource base.

The three projects are led by the International Institute of Tropical Agriculture (in West Africa and East and Southern Africa) and the International Livestock Research Institute (in the Ethiopian Highlands). The International Food Policy Research Institute leads an associated project on monitoring, evaluation and impact assessment.

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