Africa RISING in the Ethiopian Highlands

Fodder and fertilizer trees action research in Africa RISING sites

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Introduction

- Shortages of protein rich animal feed, soil fertility depletion and lack of wood for various products and services are critical challenges in the Ethiopian highlands.
- Tree Lucerne (Chamaecytisus palmensis) is one of the options to address interlinked farming systems challenges

Objectives

a) Study survival, growth, management and utilization of tree lucerne across contrasting sites and growing niches.
b) Identify key determinants of tree lucerne performance on farms in the crop-livestock systems.

Research methodologies

- FRGs were established in the eight Africa RISING research kebeles
- A total of 253 farmers participated in the action research
- Data on survival, growth, management and utilization were collected through periodic field assessments and on-station experiments

Achievements

- Tree lucerne showed better survival and growth on farms in Sinana and Lemo Africa RISING sites (Table 1).
- Tree lucerne in well-managed farmers' fields reached for use as animal feed within nine months after planting.
- The right farm typologies + compatible growing niches = successful tree lucerne farming (Figure 2).
- Local tree management practices- manuring, watering, and fencing resulted in a positive effect on the performance of tree lucerne planted on farms.
- A cutting height of 1 m to 1.5 m and a cutting frequency of 2-3 times per year found to be acceptable to keep tree Lucerne healthy and productive.
- Supplementation of tree lucerne leaf to crop residue based diets significantly improves animal performance (Figure 2).
- Trainings are given to 300 male and 100 female participants on tree lucerne management, production and utilization.
- Two students (male and female) attached and conducted MSc theses research on tree Lucerne.

Table 1. Mean survival, height and RCD by region

Survival and growth	Amhara (N=48)	Oromia (N=41)	Tigray (N=38)	SNNPR (N=32)	P value
Survival after 9 months (%)	14.81	35.21	17.89	43.56	0.000
Height after 9 months (m)	0.36	1.24	0.46	0.66	0.021
RCD after 9 months (cm)	0.34	0.88	0.56	0.93	0.002

Correlations: survival and height correlation(r) is equal to 0.527 (p=0.000); survival and RCD, r=0.786 (p=0.000)

Figure 1. Tree lucerne performance in Lemo, Africa RISING site

Figure 2. Tree lucerne and garlic intercropping in Sinana, Africa RISING site

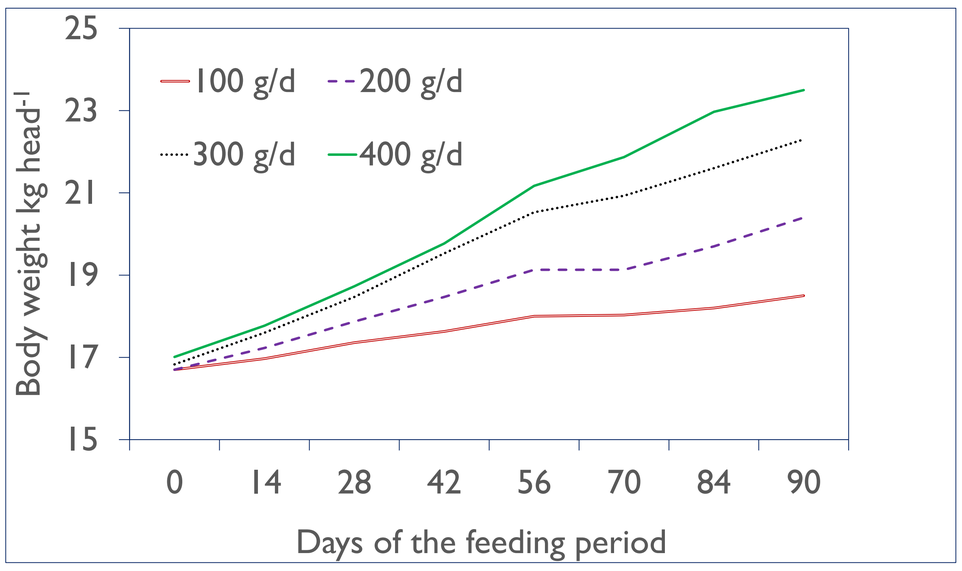

Figure 3. Body weight development of yearling Menz sheep supplemented with different levels of dried tree lucerne leaf

Future plans: facilitate private and community nurseries, trainings, development partners for scaling

Potential partnership for phase II

- Ministry of Livestock and Fishery
- Ministry of Farming and Natural Resources
- Ministry of Environmental, Forest and Climate Change
- Regional, Zonal and Woreda Agriculture and Livestock Offices
- Federal and Regional Research Institutions and centers
- AGP-LMD, GRAD, GIZ-SLM, InterAide France, CRS, RST, SUNARMA

Core partners

We thank farmers and local partners in Africa RISING sites for their support