Supplemental irrigated fodder production for fattening sheep at Lemo Africa RISING site in Ethiopia

Small scale irrigation (SSI) practices are vital to the intensification of crop-livestock mixed farming systems in the Ethiopian highlands. Farmers in the Africa RISING sites in Ethiopia have different levels of access to irrigable water, ranging from shallow wells to streams and rivers. Harnessing these water resources for irrigation is expected to diversify the income of farmers and improve their livelihoods in a sustainable manner.

As feed is the number one constraint for livestock production in the highlands, production of supplemental green fodder using irrigation appears to be an alternative solution to minimize feed scarcity during the dry period. This research, conducted with the USAID-funded Innovation Laboratory on Small Scale Irrigation (ILSSI) aims to assess the feasibility of producing irrigated fodder to supplement the rations of fattening animals and improve the income of farmers.

The study in Lemo comprised 14 farmers (of which 3 were woman headed HH) from February to August 2014. The farmers used shallow wells and manual water lifting pumps to produce irrigated oat/vetch fodder on plots of ≥25 m² each. The amount of fodder biomass produced ranged from 2.3 to 4 ton/ha. Farmers used the irrigated fodder as a supplement to feed fattening sheep (5 sheep each, which they purchased with a loan provided by the project).

In the middle of the fodder production and fattening periods, field days were organized where farmers gave feedback on the use of SSI for fodder production and intensive sheep fattening. They stressed the importance of improved water lifting technologies (eg. rope and washer pumps rather than treadle pumps) to expand SSI. Most participants said that fattening five sheep at a time was labour intensive, which they considered as a disadvantage.

Two groups of farmers emerged at the end of the trial. The majority preferred to shift to cattle fattening, arguing that a bull can be fattened with less labour, less feed, and with a profit comparable to 5 sheep. The other groups preferred to continue with sheep fattening, but with fewer sheep (1-2) at a time.

The mean initial weight of the sheep was 29.5 kg/head, and after 3 months of feeding the mean final weight was 37 kg/head. The farmers sold their sheep during the Ethiopian New Year holiday. The price of sheep, however, fell from 43 ETB/kg live weight in April 2014 (Easter Holiday) to 30 ETB/kg live weight in September (New Year), and this had a negative impact on the profitability of the fattening trial. An important observation is that marketing time and market links are crucial to profitability.

There were considerable differences among individual farmers in their capacity to manage fodder plots and fattening animals, with female-headed households generally performing better. This variability was reflected in the amount of biomass harvested and in the final body weight of sheep fattened.

The farmers learned lessons from one another’s practices during the field day visits, group discussions and training.

Following the pilot, new farmer groups were formed in the 8 Africa RISING kebeles, with each group comprising 20-25 households. The new groups planted rainfed oat/vetch fodder on plots of ≥100m² in preparation for the next irrigated fodder/fattening research during the dry period.

Figure 1 and 2: irrigated fodder plot and fattening sheep (being visited by farmers and researchers)
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.

Integrating SSI with livestock production can have a significant impact on the income of farmers. Water productivity can also be improved if fodder production and improved livestock management practices are considered simultaneously.

Irrigated fodder production can be carried out alongside vegetable production or other crops, and the biomass produced through irrigation (fodder, non-edible vegetables, and crops harvested green) can serve as a good source of supplementary feed.

Commonly, crop residues are the main source of feed for ruminant livestock in the highlands. These crop residues have low digestibility and nutrient content, especially nitrogen. Supplementing such basal diets with green fodder is expected to complement the nutrient deficiencies, improve the productive performance of animals and hence income of farmers. Through this pilot, awareness was created among farmers to expand SSI in general and irrigated fodder in particular.

Supplementary SSI practices minimize risks of crop failures and improve farmers’ resilience to shocks of unpredictable rainfall patterns associated with climate change. As livestock are an integral part of the mixed farming system (providing farm power, animal protein (food), cash income and manure) and feed is the major input required for livestock, production of fodder using SSI will increase the systems productivity as a whole and help improve the food security and nutrition of farm households.

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Figure 3 and 4. Farmers attending training on irrigated fodder production and operation of rope and washer pumps.

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