



Why Ethiopian farmers prefer traditional faba bean management practices

Key messages

- Using the terms ‘improved’ and ‘weed’ indiscriminately, without properly understanding the multiple benefits farmers derive from the plots they cultivate, can be highly misleading.
- Accepting these terms uncritically can lead to misperceptions of farmer irrationality because they do not adopt ‘improved’ practices. Studies such as this take a broader, ‘systems’ view of the factors constraining adoption. They are demonstrably more informative and help to identify more adoptable intensification strategies.
- These strategies might prove to be *stepwise*, i.e. progressive experimentation starting from the existing indigenous practice leading ultimately to greater specialization, e.g. allocating land systematically to both grain and forage production. Future studies should examine the benefits of managed forage—bean intercrops to increase total plot productivity and the quality of the forage component of the system.

The issue

Low productivity of staple crops is often attributed to the poor management practices of smallholder farmers. ‘Improved’ crop management practices for many staple crops in Ethiopia have been widely promoted. Adopting these practices can result in significant yield increases under on-farm conditions but, in spite of these benefits, they are often not adopted by smallholders in the longer-term.

Possible reasons for non-adoption or dis-adoption of improved weed management practice packages for faba bean are based on the hypothesis that smallholders do not use improved management practices because they do not increase the overall benefit farmers derive from the traditional management faba bean plots.

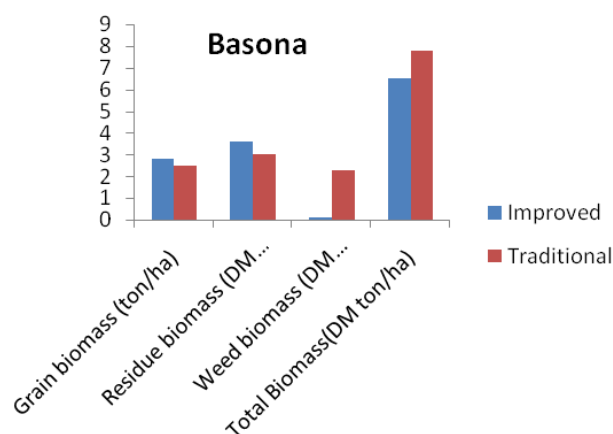
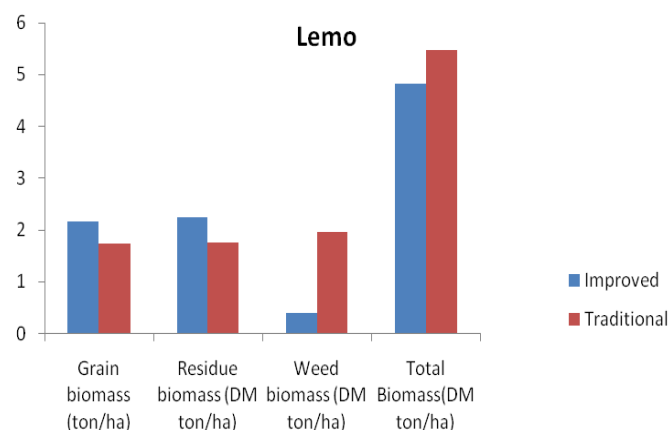
Africa RISING diagnostic studies found that men and women farmers in two sites deliberately weed their faba bean fields much later than is recommended for improved management systems. This allows volunteer ‘weeds’ like oats and *Trifolium* species—which are relatively nutritious fodders—to create an *ad hoc* forage intercrop in areas with limited grazing land.

Findings

Grain, crop residue and forage yields

At Basona Worena, the grain yield and crop residue biomass were significantly higher under improved management practice. At Lemo, no significant effect of management practice was observed on grain yield, while crop residue biomass was significantly higher with improved management practices. Weed biomass was significantly higher under traditional management at both sites.

Figure 1. Effects of management practices on faba bean grain, crop residue and weed biomass



Cost-benefit analysis

A commonly applied rule of thumb for smallholder systems is that a value costs ration (VCR) of at least two is required to incentivize the adoption of new management practices. Results from Basona Worena (VCR value of 1.01) indicated no economic benefit from adopting improved management practices. In Lemo, where the incremental benefits were greater (VCR value of 1.92), they still failed to meet the required threshold. In effect, the opportunity costs associated with the loss in weed biomass due to the adoption of improved practices are not adequately offset by the economic gains from increased grain yield and crop residue biomass.

Moreover, the VCR calculations do not take into account socio-economic factors that potentially pose greater barriers to adoption. Some farmers have no other sources of feed for their livestock during the periods when these weeds are available. Forgoing indispensable forage resources would force farmers to sell their animals at lower prices, aggravating their losses.

Table 1. Cost benefit analysis of improved versus traditional practices

	Lemo	Basona
Incremental returns		
Incremental faba bean grain yield (ton/ha)	0.43	0.31
Incremental faba bean residue biomass (ton/ha)	0.47	0.57
Total incremental returns	7390	5790
Variable costs		
Labour cost	1440	1440
Net incremental returns	5950	4350
Opportunity costs		
Total weed biomass from traditional practice ton/ha)	1.55	2.15
Total opportunity costs	3100	4300
Value cost ratio (VCR)	1.92	1.10

Methodology

During the 2014 long rains season, 40 farmers (36 men and 4 women) at Lemo woreda and 20 farmers (18 men and 2 women) at Basona Worena woreda planted faba beans under two contrasting management regimes (traditional versus improved) on 100m² plots. For this study, practices differed only in the frequency and timing of weed removal. The traditional practice involved one late 'weeding' for the purposes of harvesting the weeds for forage. The improved management practice required two 'weedings' which generated insignificant quantities of forage.

Grain and final crop residue biomass yields of faba bean, as well as weed forage biomass, were recorded and compared between management practices. Value cost ratio (VCR) was calculated for the improved management practice at each site as the ratio of the value of incremental returns from improved practice compared to the opportunity costs associated with the traditional practice.

Conclusions

- Acute feed scarcity during the long rain season forces farmers to stick with traditional faba bean practices which provide substantial forage biomass for livestock. They miss out on the grain benefits from 'improved' practices.
- In the absence of alternative feed resources, farmers choose traditional crop management practices that avoid risks that they lose their livestock.
- Further systematic research to ensure the availability of good quality forage and good grain productivity is essential to protect the valuable assets of the smallholder farmers.
- Researchers and development practitioners should consider a broader systems approach and total plot productivity, rather than just the partial benefits (for instance from grain productivity gains) from specific plots of land under smallholder production systems.



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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