GREENING ETHIOPIA

ECOLOGICAL AGRICULTURE WITH SMALLHOLDER FARMERS IN ETHIOPIA

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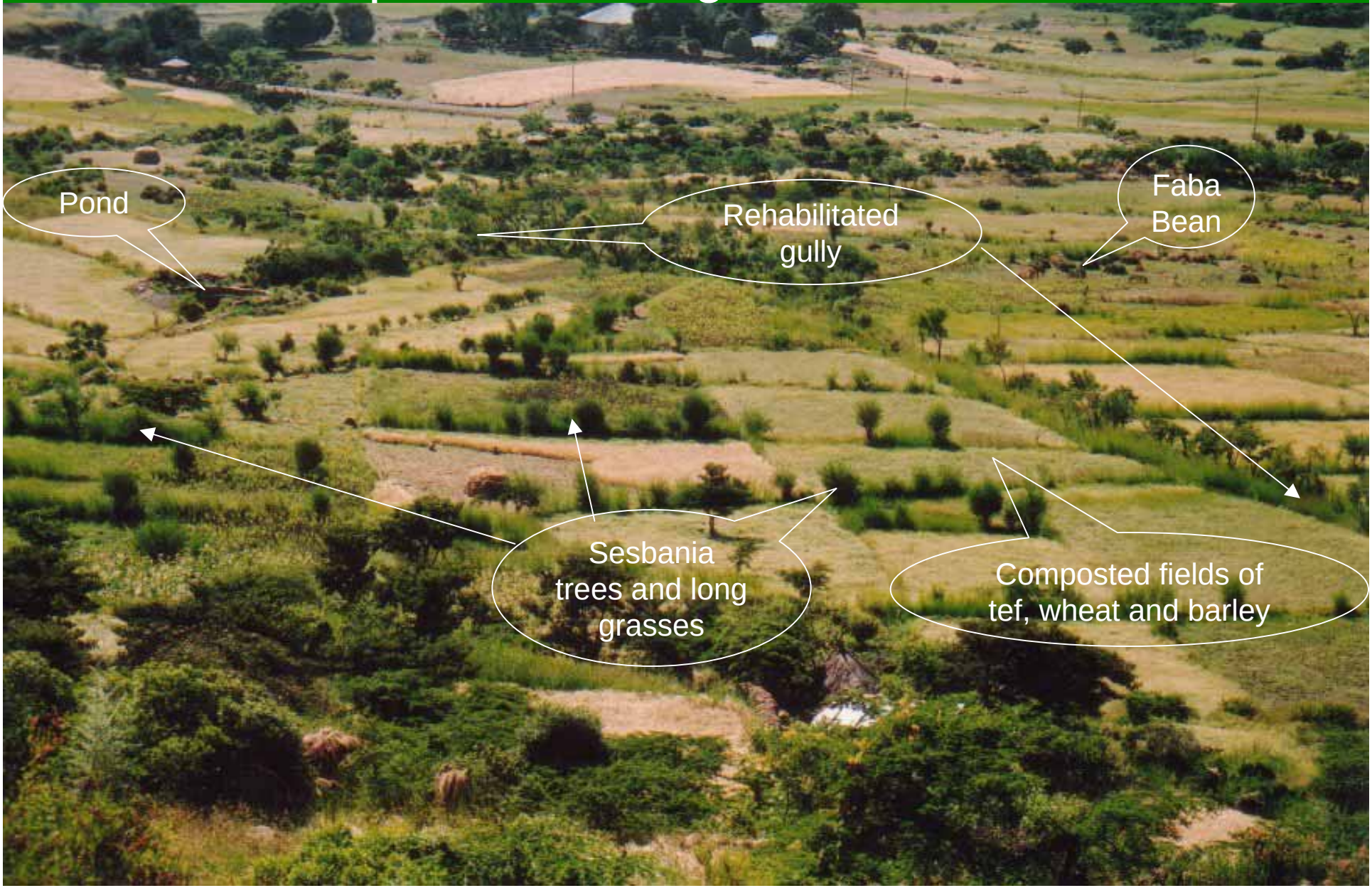
- Land degradation is one of the most serious problems facing Ethiopia today.

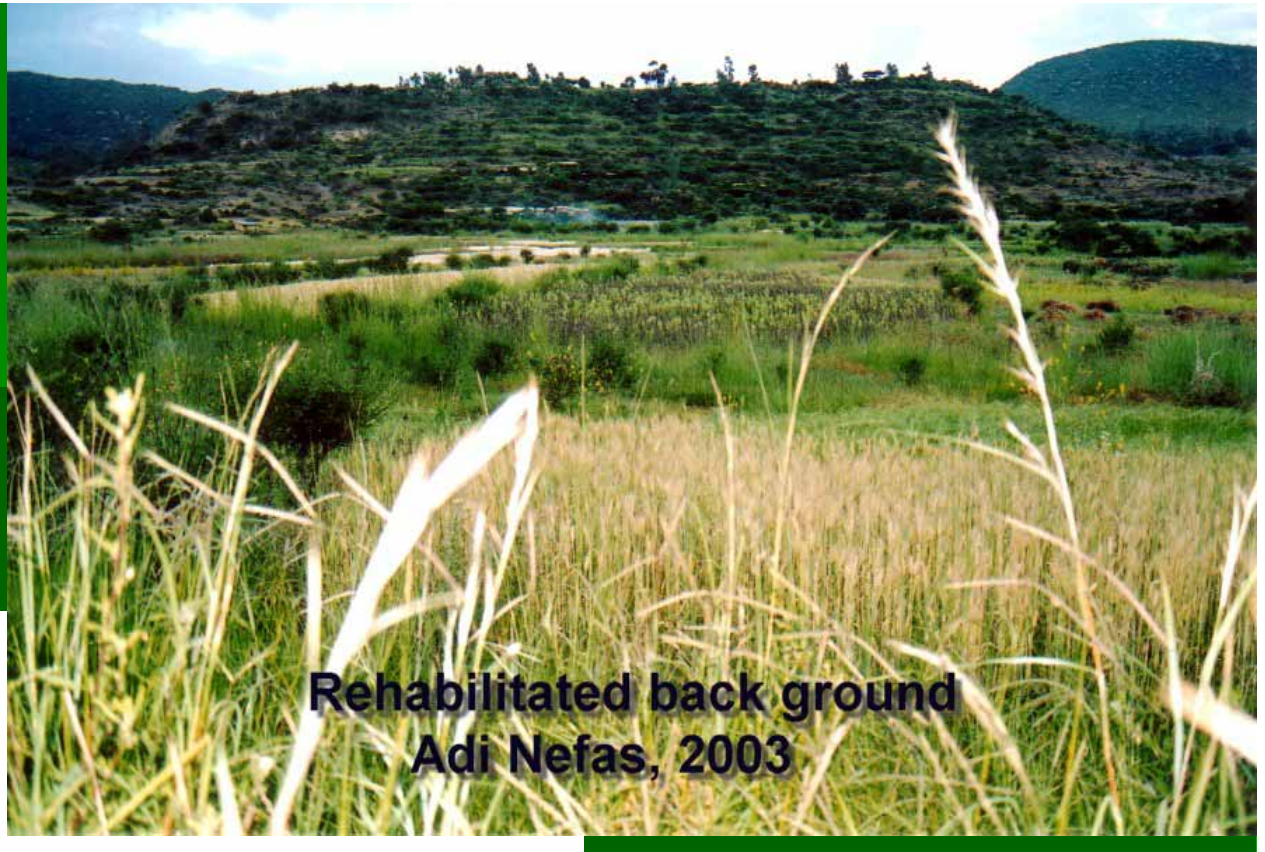
The components of the project, or ‘basket of choices’

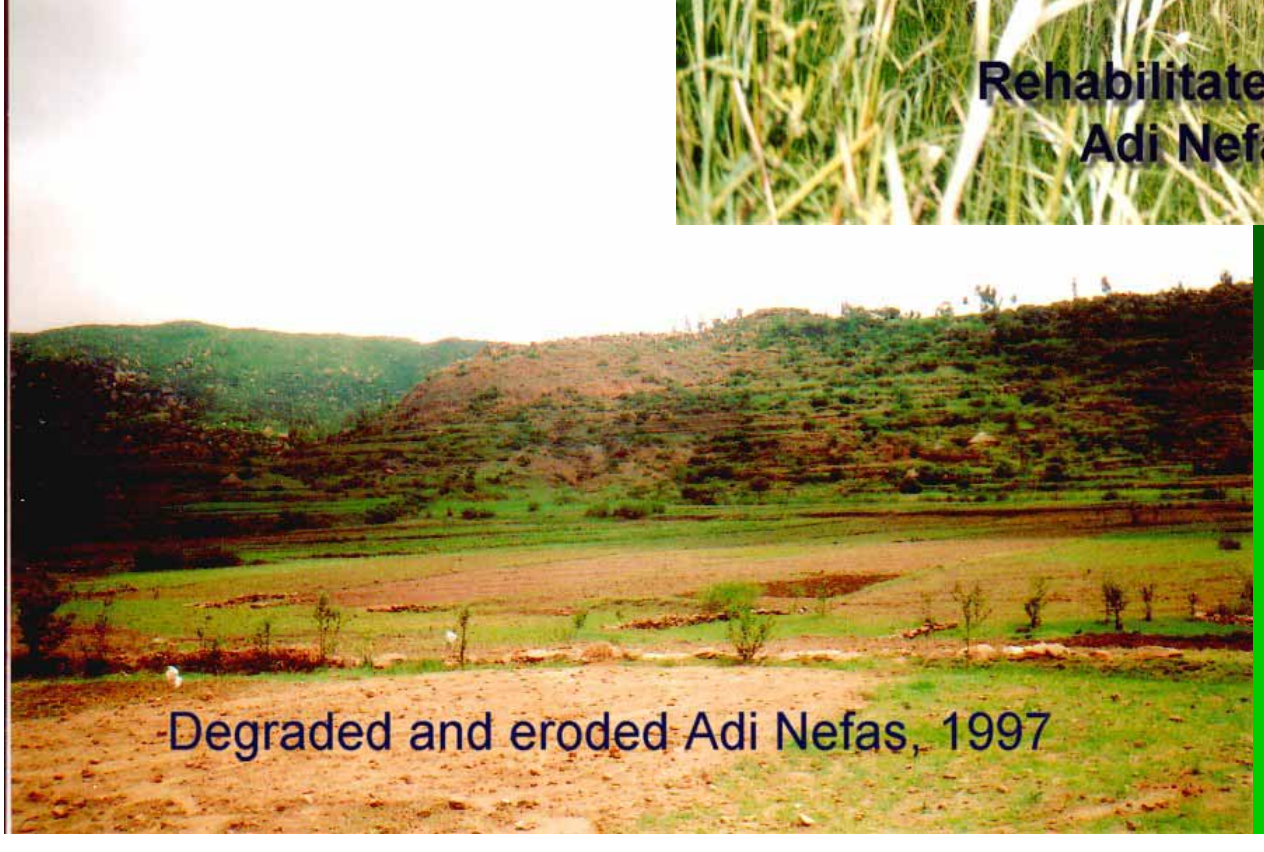
- Making and using compost (ISD initiative)
- Trench bunds for catching both soil and water (BoA initiative)
- Planting small multipurpose trees – particularly Sesbania – and local grasses (ISD and BoA initiative improved by farmers)
- Halting gullies (at farmers demand)
- Making ponds (farmers initiative)
- Making and using bylaws to control access and use of local biological resources (ISD initiative)

Adi Nefas
All the components being used in October 2003

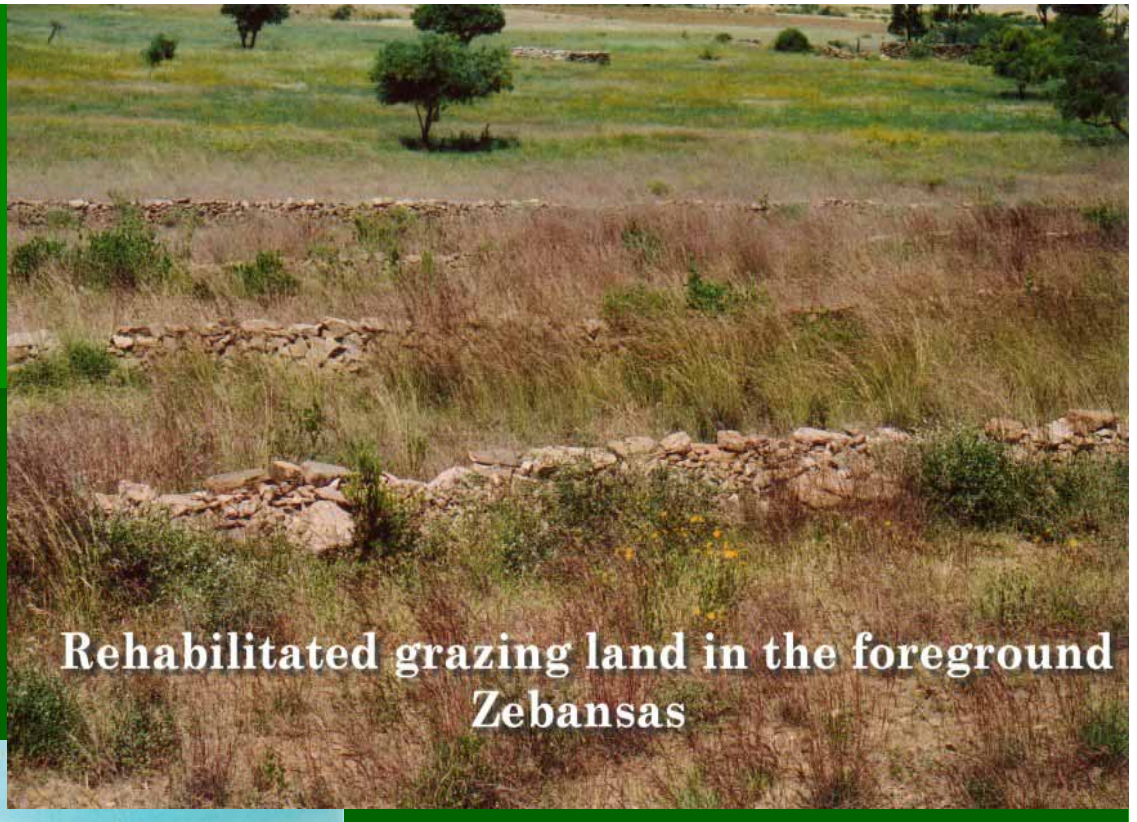


Adi Nefas in 1997 and 2003

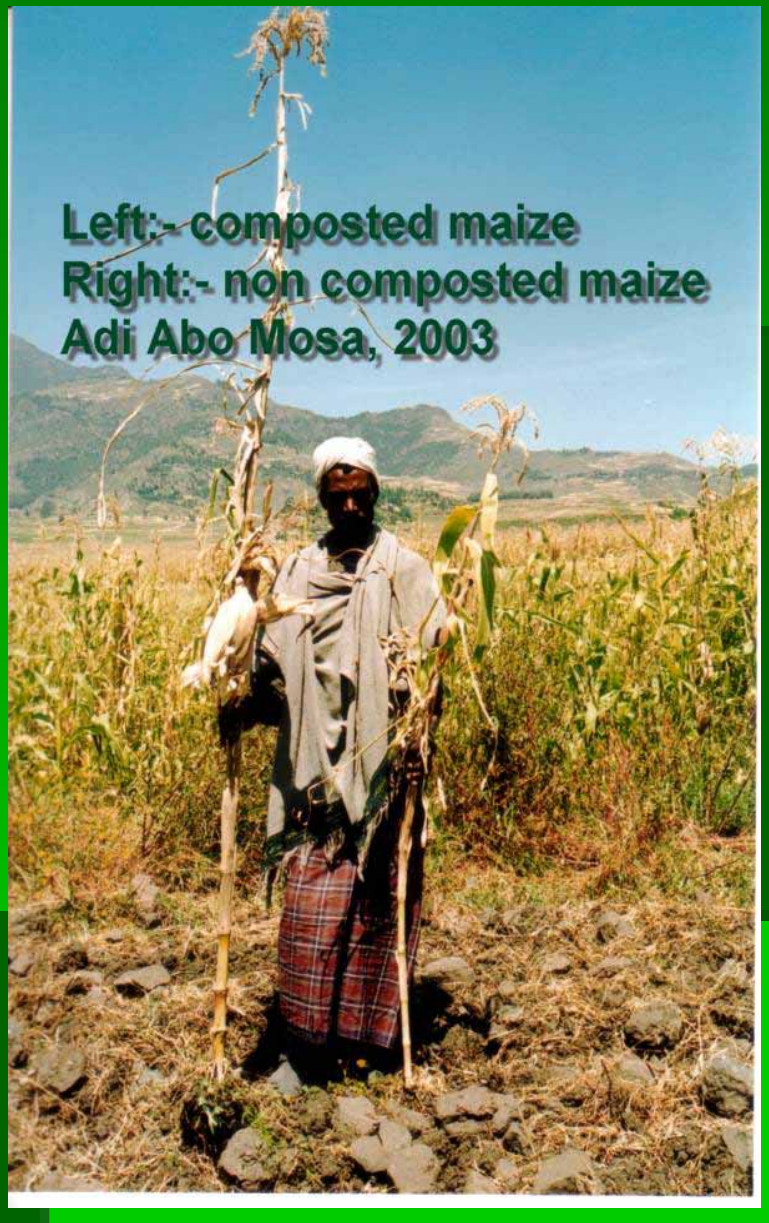




Zeban Sas grazing area in 1996 – starting the rehabilitation work



Zeban Sas grazing area in October 2003


Left:- composted maize
Right:- non composted maize
Adi Abo Mosa, 2003


Left:- Composted maize
Right:- Non composted maize


Training on Compost preparation

Impact of compost on yields

- Sampling technique (FAO method for monitoring food security)
- Samples were taken with the farmers.
- Fields were selected and 3 one-metre square plots were cut and threshed, and the straw and grain weighed with the farmers.

10 Birr is equivalent to 1 Euro, or 8.5 Birr equals 1 USD.

Table 1: Grain yields (in kg/ha), expenses and returns (in Birr) for Adi Nefas in 2003 (7 years)

Crop	Input	Yield	Gross income	Fertilizer cost	Net income
Faba Bean	**Compost**	**4391**	**13173**	0	**13173**
	Check	2287	6861	0	6861
Finger Millet	**Compost**	**2650**	**4505**	0	**4505**
	Check	833	1416	0	1416
Maize	**Compost**	**5480**	**8768**	0	**8768**
	Check	708	1133	0	1133
Teff	**Compost**	**1384**	**3875**	0	**3875**
	Fertilizer	1033	2892	377	2515
	Check	739	2069	0	2069
Wheat	**Compost**	**2250**	**5625**	0	**5625**
	Fertilizer	1480	3700	377	3323
	Check	842	2105	0	2105
Barley	**Compost**	**1633**	**3266**	0	**3266**
	Check	859	1718	0	1718

Table 2: Grain yields (in kg/ha), expenses and returns (in Birr) for Adi Gua'edad in 2003 (1st year)

Crop	Input	Input	Gross income	Fertilizer cost	Net income
Faba Bean	**Compost**	**2900**	**8700**	0	**8700**
	Fertilizer	1100	3300	377	2923
	Check	766	2298	0	2298
Finger Millet	**Compost**	**2000**	**3400**	0	**3400**
	Fertilizer	1433	2436	377	2059
	Check	500	850	0	850
Maize	**Compost**	**2000**	**3200**	0	**3200**
	Fertilizer	1133	1813	377	1436
	Check	680	1088	0	1088

Table 2: continued

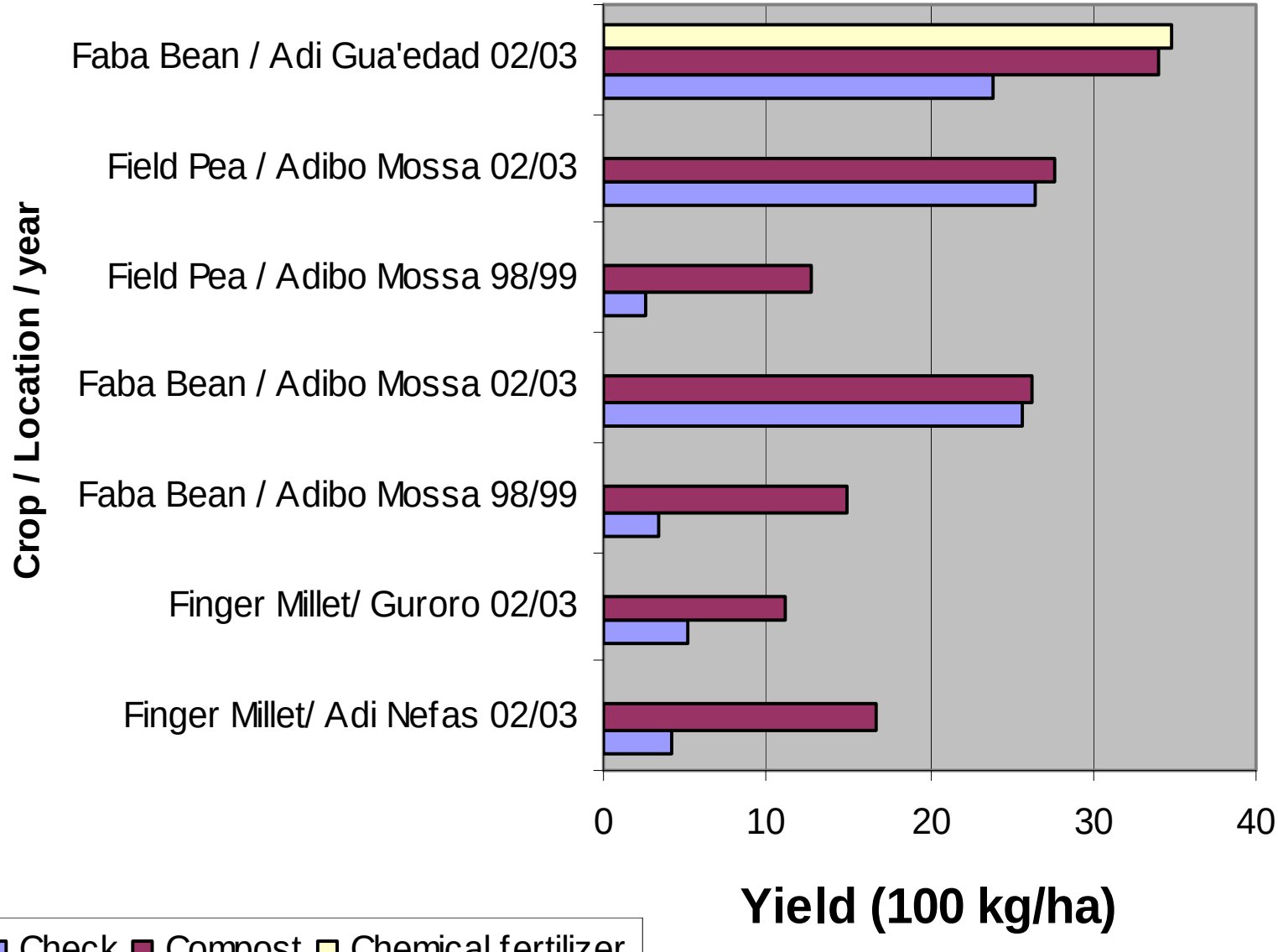
Crop	Input	Input	Gross income	Fertilizer cost	Net income
Barley	**Compost**	**2193**	**4386**	0	**4386**
	Fertilizer	1283	2566	377	2189
	Check	900	1800	0	1800
Wheat	Compost	1020	2550	0	2550
	Fertilizer	**1617**	**4043**	377	3666
	Check	590	1475	0	1475
Teff	**Compost**	**1650**	**4620**	0	**4620**
	Fertilizer	1150	3220	377	2843
	Check	390	1092	0	1092

10 Birr is equivalent to 1 Euro, or 8.5 Birr equals 1 USD.

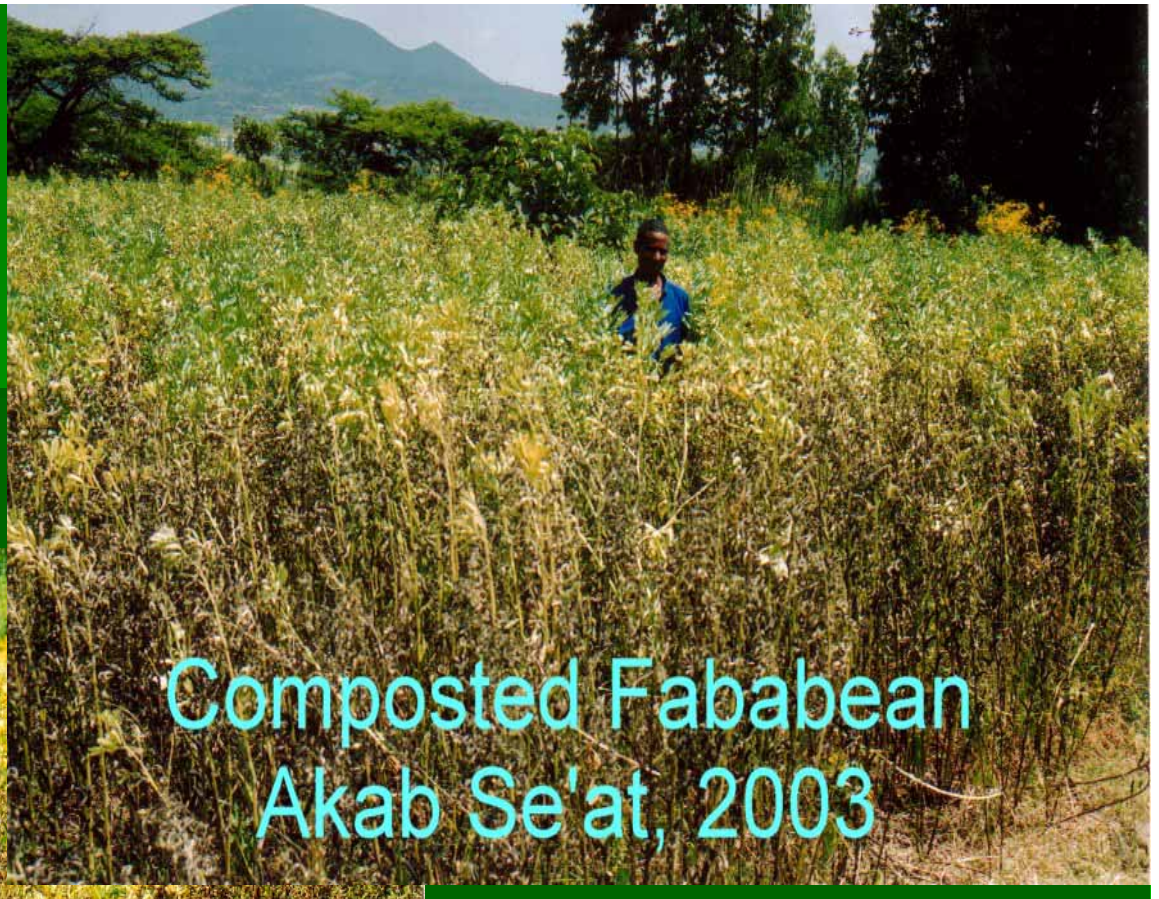
Crops not usually given chemical fertilizer

- Finger Millet
- Faba Bean
- Field Pea
- These are usually not given much attention, but with compost, high yield increases have been obtained.
- It is interesting to see that the ‘checks’ for faba bean and field pea in Adibo Mossa in 2002 were nearly the same as the compost treatment.
- Perhaps they were growing on previously composted fields and were benefiting from the residual effect of the compost

Yields (100 kg/ha) of finger millet, faba bean and field pea in 98/99 and 02/03, in Tigray



Faba Bean with and without compost



Yields have risen from less than 500 kg/ha on non-compost treated fields to around 2,500 kg/ha when compost is applied.

Indicators of Sustainability

- Maintaining or increasing agricultural biodiversity: for example, Ziban Sas was growing only wheat and barley mixed together and a little teff, but now other crops e.g. maize and faba bean, are also grown.
- Reduced weeds: weed seeds, pathogens and insect pests are killed by the high temperature in the compost pits, but earthworms and other useful soil organisms establish well.
- Increased moisture retention capacity of the soil: if rain stops early, crops grown on composted soil resist wilting for about two weeks longer than those grown on soil treated with chemical fertilizer.

- Disease and pest resistance: as seen through the problem of shoot fly on teff and root borer on faba bean in Tahitai Maichew and La’elai Maichew respectively, crops are more disease and pest resistant.
- Residual effect: farmers who have used compost for one or two years can obtain high yields from their crops the next year without applying compost afresh.
- Economic returns: farmers have been able to stop buying chemical fertilizer, but they still get even higher yields.
- Flavour: food is said to taste better.

Ethiopia and Organic Production

- The Government has stated its interest to increase the capacity of farmers to use organic methods of crop production.
- The results of the farmers in Tigray in producing and using compost indicate that the aim for Ethiopia having a substantial number of farmers producing organically could be realized.

A farmer of the future