

PROJECT TITLE

Fencing church forests in Northern Ethiopia

PROJECT PURPOSE AND OBJECTIVE

The main purpose of the project is to exclude Livestock intervention which have been seriously hampering tree regeneration and then ultimately threaten the survival of church forests of Ethiopia.

The main objective is to build fences around the church forests and there by

- block livestock entrance in to the forest
- stop further encroachment by farm land expansion
- clearly show the boarder for legal land use right

PROJECT RATIONALE

In northern Ethiopia forests around churches are the last remnant forest patches. These forests are currently under threat, probably due to diminishing areas and extensive grazing by cattle. A study assessed the effect of livestock grazing on the regeneration of four indigenous tree species in two church forests (Wassie, et al., 2009). The four species have a high abundance and socioeconomic value but limited regeneration in the two forests. The study investigated the effect of grazing and trampling on seed germination, seedling survival, and seedling growth.

It was found that livestock grazing has a strong negative effect on germination, seedling growth and mortality. In fenced plots, more seeds germinated, seedling survival was higher and seedlings grew faster (Fig 1). In unfenced plots, no seedlings survived until the end of the year, indicating that grazers destroyed the seedling bank in and around the forest (Fig 2).

The study concluded that for effective indigenous tree species regeneration in these church forests the control of livestock pressure is mandatory (Fig 3). Seeds dispersed outside the forest will not have a chance to establish seedlings, grow and colonize the surroundings. Livestock grazing thus has a paramount impact on the long-term sustainability of church forests and their role in restoring the degraded surroundings.

In conclusion, grazing strongly negatively influenced seed germination, seedling survival and seedling growth, although species effects are different to some extent. This is even the case under incomplete animal exclusion circumstances. If the fences had been tighter, the results

would have been even more pronounced. This negative grazing impact can be related to the lack of regeneration that was reported for a number of tree species. To achieve indigenous tree species regeneration in church forests controlling livestock pressure therefore is mandatory. This implies that livestock grazing is of paramount importance for both the internal sustainability of church forests and for restoration of the degraded surroundings. Possible solutions could be fencing against cattle grazing, seeding and planting in fenced areas, and planting browsing resistant species around the forest. Of course the awareness of local people in this respect is crucial. Therefore excluding livestock interference through fencing is recommended as a remedy before the damage to these forests by livestock become irreversible.

This project will try to address the issue by fencing few of church forests which are under threat while still are homes for many native plant and animal species.

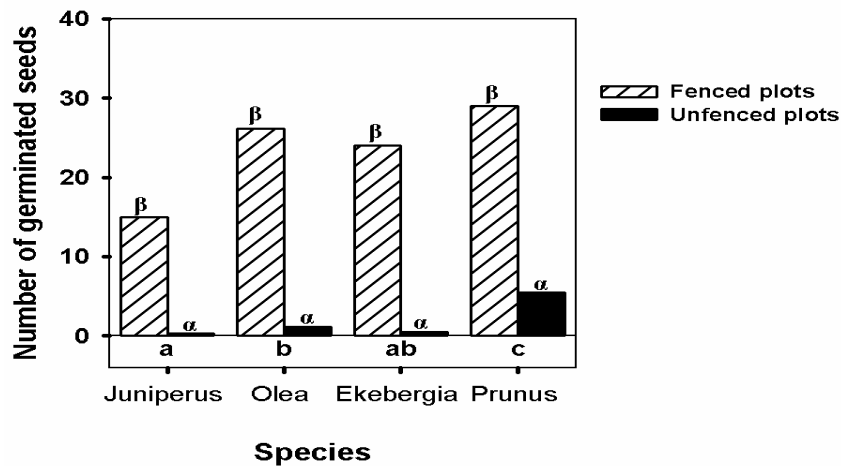


Figure 1. Effects of forest/site, fencing and species on the number of germinated seeds of the four study species. Bars show mean values, small letters differences among species, greek letters differences between fenced and unfenced plots.

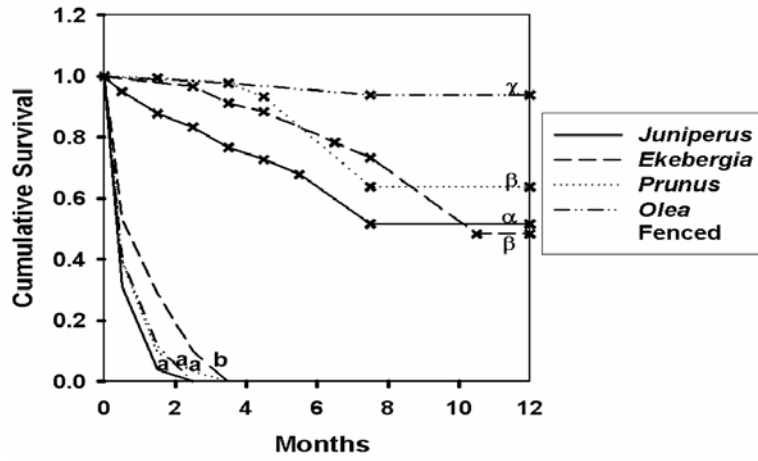


Figure 2 Seedling survival curves for forest/site, fencing and species. Lines with x marks show the fenced plots.

PROJECT ACTIVITY

Out of the many church forests in Northern Ethiopia 28 forests were assessed for the vegetation composition and their overall status. Although all of them have got paramount importance on conserving the native species of Ethiopia and needs conservation attention, in this project it is planned to address some of them. Accordingly, the main activity of the project will be fencing the church forests by loosen stone wall presented in Table 1.

Table1. Proposed church forests to be fenced

Ser No	Name of the site	Area Ha	Perimeter Km	No woody Species estimated	Type of fence
1	Gelawdios	100	6	48	Stone Wall
2	Mosha	13	2.8	53	Stone Wall
3	Debresena	11.5	1.9	40	Stone Wall
4	Wonkeshit	50	3.8	88	Stone Wall
5	Dedim	36.6	3	26	Stone Wall
6	Dengolt	25	2.6	50	Stone Wall
7	Wuahir	8.4	1.4	62	Stone Wall
8	Gibstawit	8.7	1.7	52	Stone Wall
9	Mantogera	5	.89	59	Stone Wall
10	Gedam Selase	15	1.9	99	Stone Wall
11	Zhara	8	1.6	46	Stone Wall
12	Amstya	22.8	2	57	Stone Wall
13	Korata	48	2.8	69	Stone Wall
14	Woji	22.5	2.3	46	Stone Wall

PROJECT BUDGET

Table 2. Basic costs for different materials

Source of Costs	Unit	Unit Price	Required Amount	Total Cost
Collecting and delivery of stones	M ³	6 USD/ m ³ of stone	1000 m ³ /km of fence	6000 USD
Entrance Gates (2 m width x 170 height)	No	25 USD/gate	Two gates/church forest	50 USD/Church forest
Casual Labor (foundation digging)	PD	1USD/PD/day	500 PD/km	500 USD/Km of Fence
Technician (Carving Stones)	PD	5USD/PD/day	25 PD/km	125 USD/km of Fence
Pit latrine	No	3000 USD/Complete Pit	1 pit latrine/Church	3000USD/Church

Remark

- The height of the fence will be 150 cm above ground with 20 cm buried in the ground
- The fencing wall will have 60 cm thickness
- It needs nearly 1 m³ of stones to build 1 mt long Fence
- The number of churches to be fenced will be determined per the availability of the fund. Please refer the perimeter of each forest on Table 1.
- The size of the Latrine will be: 6 mt depth X 10mt length X 4 mt width Covered with concrete slabs with corrugated sheet of iron wall and roof. It will have partitions of 10 rooms each 4 m²

○	○	○	○	○
○	○	○	○	○

- All price here offered are subjected to fluctuations due to current price inflation in Ethiopia
- All price are given in US Dollar

PROJECT TIME FRAME

REFERENCE

Wassie, Alemayehu; Sterck, F.J.; Teketay, D.; Bongers, F. (2009) Effects of livestock exclusion on tree regeneration in church forests of Ethiopia .*Forest Ecology and Management* 257 (3). - p. 765 - 772.