

Participatory development of bush control techniques to improve rangelands and food security in Borana, Ethiopia

1. Introduction

- Bushes encroach 88% of the rangeland area in Borana
- Leads to suppression of the herbaceous biomass → affects livestock productivity and food security of pastoralists
- Techniques developed to date to control bushes are not very efficient and sustainable → invasive species are not effectively reduced and continue to grow/multiply through coppicing
- More effective and sustainable bush encroachment control techniques that include indigenous knowledge need to be developed



Fig.1: Bush encroached rangeland in Borana

2. Objective

Participatory action research project (PAR) to develop and test jointly with practitioners, local authorities and communities innovative and effective methods to control bush encroachment

3. Methods

Site and participants selection

- 5 sites for rehabilitation selected together with community and local leaders
- In each site, 6 to 12 ha delimited for experimental treatment and data collection
- 15-20 people per site selected by the community and trained by researchers to implement the various bush thinning techniques

Bush thinning treatments

- Control (enclosure + no treatment)
- Stand base burning (without thinning)
- 50% and 75% thinning + base burning
- 50% and 75% thinning + debarking



Fig. 2: Thinning + base burning

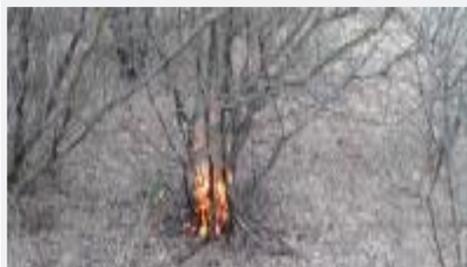


Fig. 3: Stand base burning (without thinning)



Fig. 4: Thinning + base burning right after treatment

Data collection

- Number of dead bushes at end of rainy season following the treatments on 20*20m sampling plots
- Herbaceous cover, composition and diversity from 0.5* 0.5m quadrats in each corner and center of the sampling plots
- Community perception

4. Results

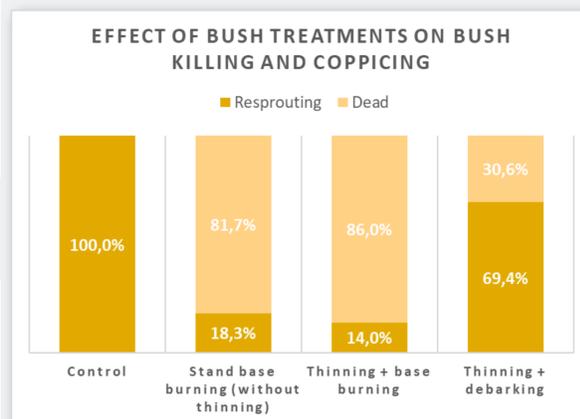


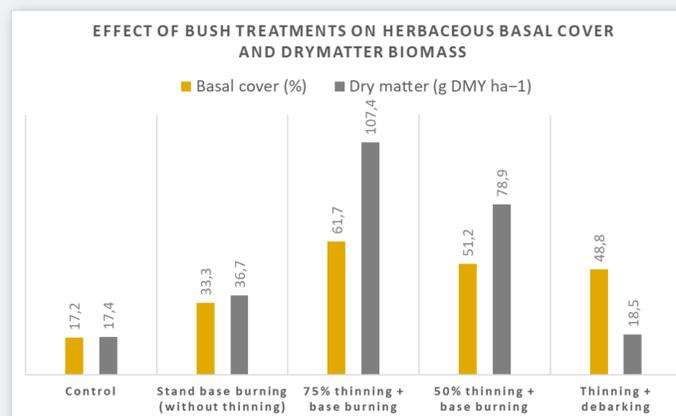
Fig. 5: Thinning + base burning



Fig. 6: Stand base burning (without thinning)



Fig. 7: Thinning + debarking



Stand base burning alone is more effective than other treatments on ground branched bush species such as *Vachellia mellifera* and *Vachellia drepanolobium*.



Fig. 8: Madhacho site right after stand base burning (without thinning) and in the next rainy season following bush treatment (*V. mellifera*)

5. Conclusions

- **Stand base burning (without thinning) and thinning + base burning were the two most efficient and most preferred bush thinning methods**
- Thinning the bushes had a positive effect on herbaceous basal cover and biomass production but was more labour intensive than stand base burning alone
- The communities suggest that bush control should not be done in isolation → integrate with other measures to control land degradation, such as soil and water conservation measures
- The strong involvement of the beneficiaries into the problem identification, trial design, implementation and monitoring/evaluation were considered as success factors by the communities and the researchers
- **The inclusion of traditional knowledge led to effective and successful co-development of new techniques for bush control in Borana lowlands**