

## Vegetation composition, structure, distribution and growth performance of natural forest patches across agro-ecologies in Northwestern Ethiopia

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### INTRODUCTION & AIM

#### Causes

Forest degradation  
Deforestation

#### Effects

Climate change, Ecological instability  
Socioeconomic crisis

#### Solutions

Understand site specific current status  
Restoration, Afforestation, Reforestation

#### Target

Understand site specific current status for sustainable and successful restoration plan

#### Objectives

To evaluate the diversity, composition, distribution, and growth performance of forest vegetation in relation to environmental circumstances

### METHOD

#### Site selection and sampling

- Three agroclimatic zones (Highland, mid-altitude, and lowland)
- Three forest patches for each agroclimatic zones (nine forest patches)
- Laid transects (across the elevation with 200m regular distances)
- Plots/quadrates established along the transects in 200m regular distance (72 20m by 20 m plots established)

#### Data collection

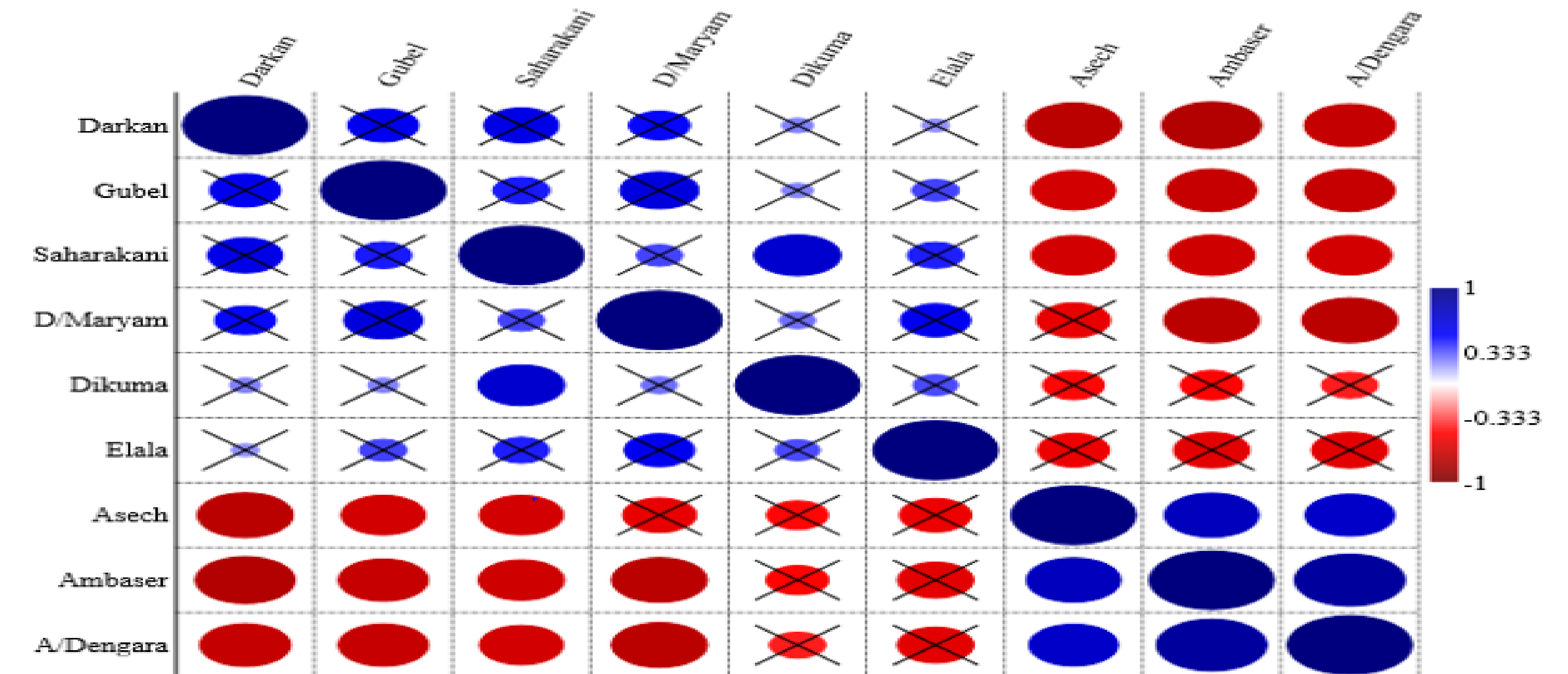
- Topographic data (elevation, slope, aspect)
- Biophysical data (species name, number, height, DBH, cover abundances, human impact, grazing impact)

#### Data analysis

- Diversity indices (Shannon, Simpson)
- Descriptive (mean)
- Correlation (Pearson)
- MANOVA (R Ver. 4 software)

### RESULTS & DISCUSSION

Significant variations ( $p < 0.008$ ) were found in vegetation features along the slope, forest patches, and agro-ecology. When compared to other forest patches, highland, and mid-altitude forest patches had the highest species diversity (2.48) and stocking (2578 trees ha<sup>-1</sup>). The gentle slope has the most species diversity (2.83). The species similarity between highland and mid-altitude forest habitats was found significant (69%). The vegetation cover in the mid-altitude forest patches was also high (abundance: 5-12%). In all the forest patches examined, tree life forms exceeded shrubs, climbers, and herbs.



### CONCLUSION

According to the study's findings, the state of forest resources varies considerably across different environmental variations. Despite the impression of entire forest patches from the outside, the interiors are open, with only huge and mature trees covering the canopy. This state has been triggered by deforestation, degradation, and inappropriate human and grazing operations.

### FUTURE WORK / REFERENCES

Therefore, extraordinary conservation measures are required, with the active participation of forest researchers, development agents, and political leaders, to safeguard the few remaining natural forests