

Assessing the impacts of *Acacia mearnsii* on grazing provision and livestock production



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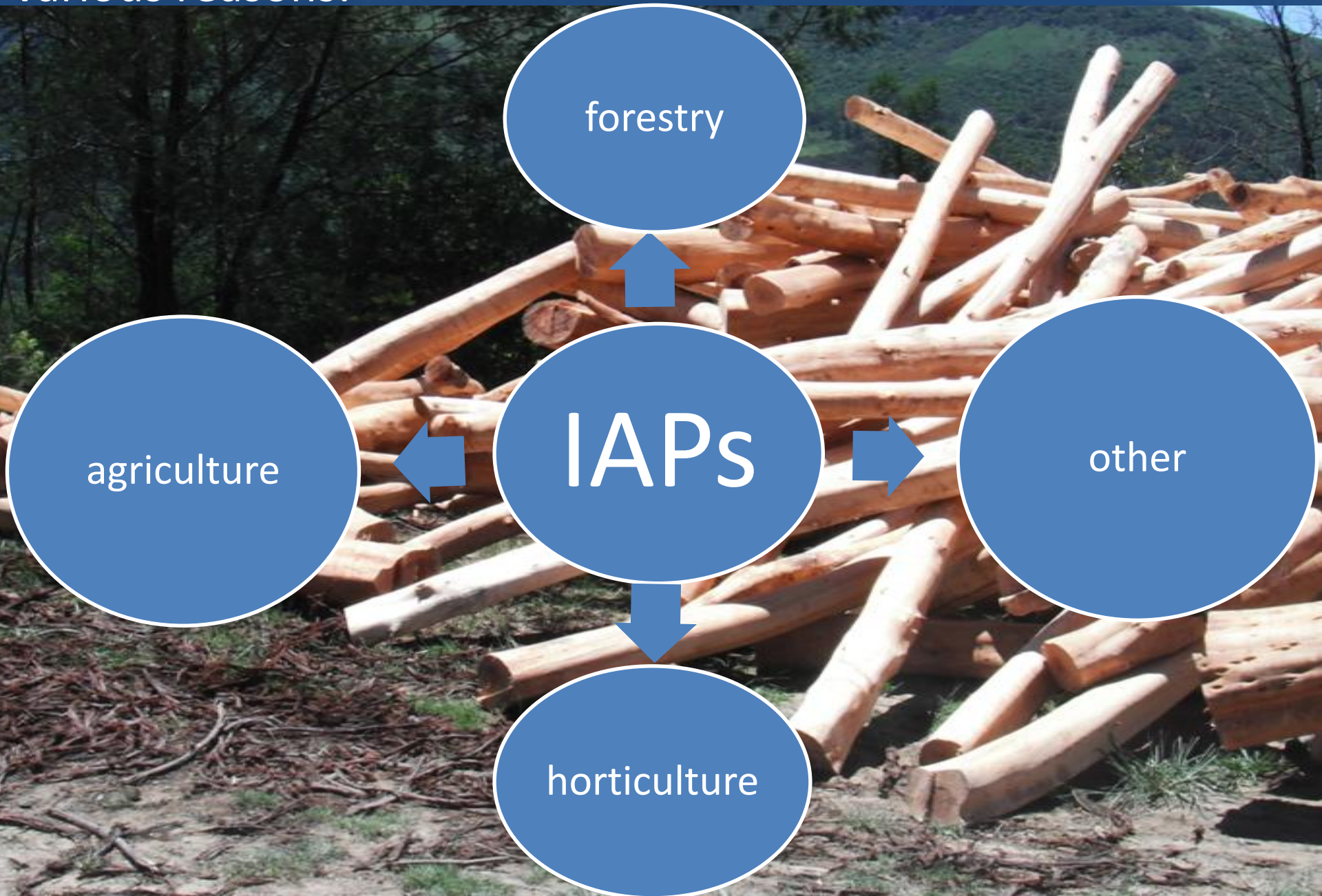


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our future through science

Invasive Alien plants (IAPs) transported across the globe for various reasons:



Alien plants, mainly trees and woody shrubs, have invaded an estimated 10.1 million ha of South Africa and Lesotho or an equivalent condensed area is 1.7 million ha.

Alter Ecosystem functioning through Excess use of resources: water, light & oxygen or by adding resources such as (nitrogen) (Richardson and van Wilgen, 2004)

Consequences: changes in landscape structure, hydrological regimes, fire frequency & intensity, species richness, composition of the native flora & fauna (Richardson and van Wilgen, 2004)

Acacia mearnsii is an extensive invader in South Africa



- Ever green, leguminous tree, native to Australia
- Introduced: 1864 (Nyoka, 2003)
- Provides: shade, windbreaks, commercial tannin, fuel wood
- Invades habitats: grasslands, forests, riparian zones, roadsides

- Threatens local vegetation:
 - water
 - soil nutrients
 - organic matter
- Increase water loss from riparian zones
- Little has been done to assess its impacts on grazing provision

AIM: To improve understanding of impacts of *Acacia mearnsii* invasion on grazing and related services

Impacts on growth form dominance of the indigenous vegetation spp:

Density impacts on forage quality and quantity

Density impacts on basal cover



Impacts on soil resources and conditions required to support grazing:

Density impacts on soil structure and composition

Density impacts on soil moisture content

METHODS:

Study site: Stutterheim



Methods: Experimental Farms

Invaded



Cleared



METHODS: data collection

Experimental sites for sampling: 4 Treatments



Uninvaded



Light



Dense



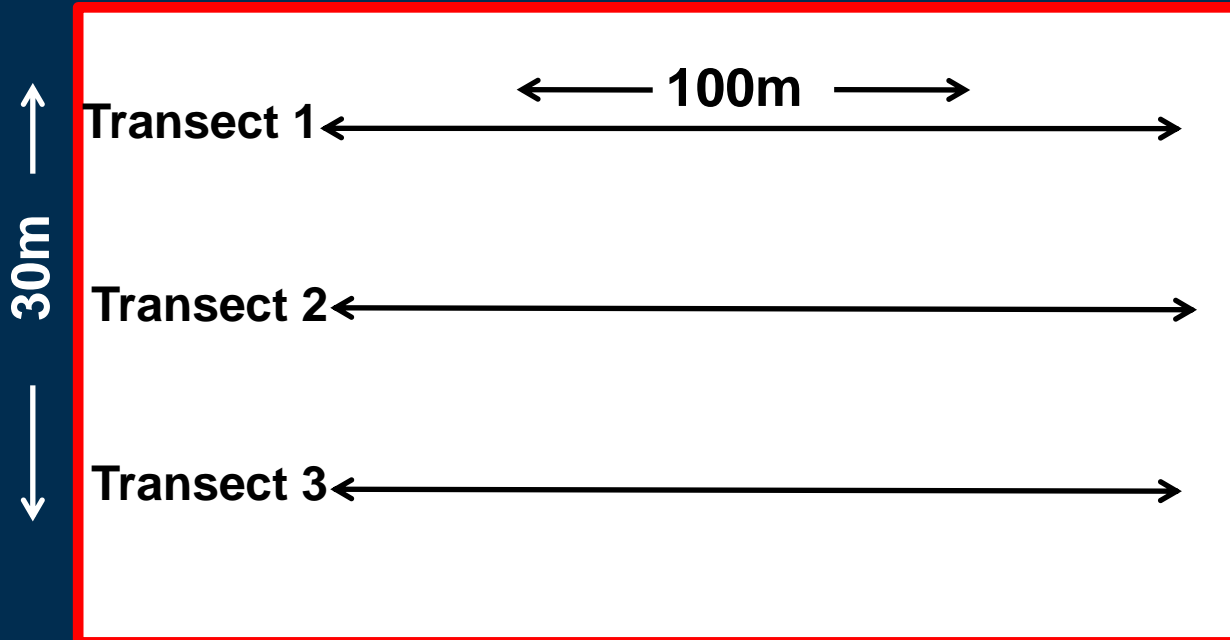
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METHODS: Vegetation assessment



Plot

← 100m →



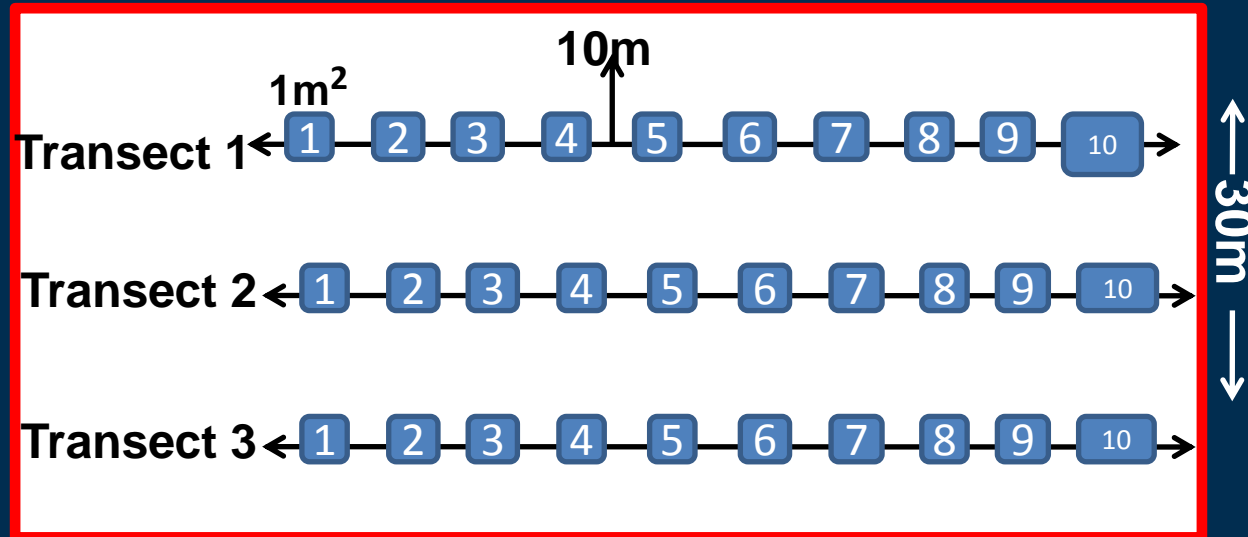
- 5 sites in each treatment
- Point to tuft method: record species
- Disc Pasture: herbaceous biomass

METHODS: Soil assessment



Plot

← 100m →



- 10 x 1m² quadrates on each 100m transect
- Soil samples: moisture & composition, texture etc.

Results: Ecological groups

Decreasers: palatable species, decrease with overutilisation or underutilisation

Increaser I: species that increase with underutilisation

Increaser II: increase with overgrazing

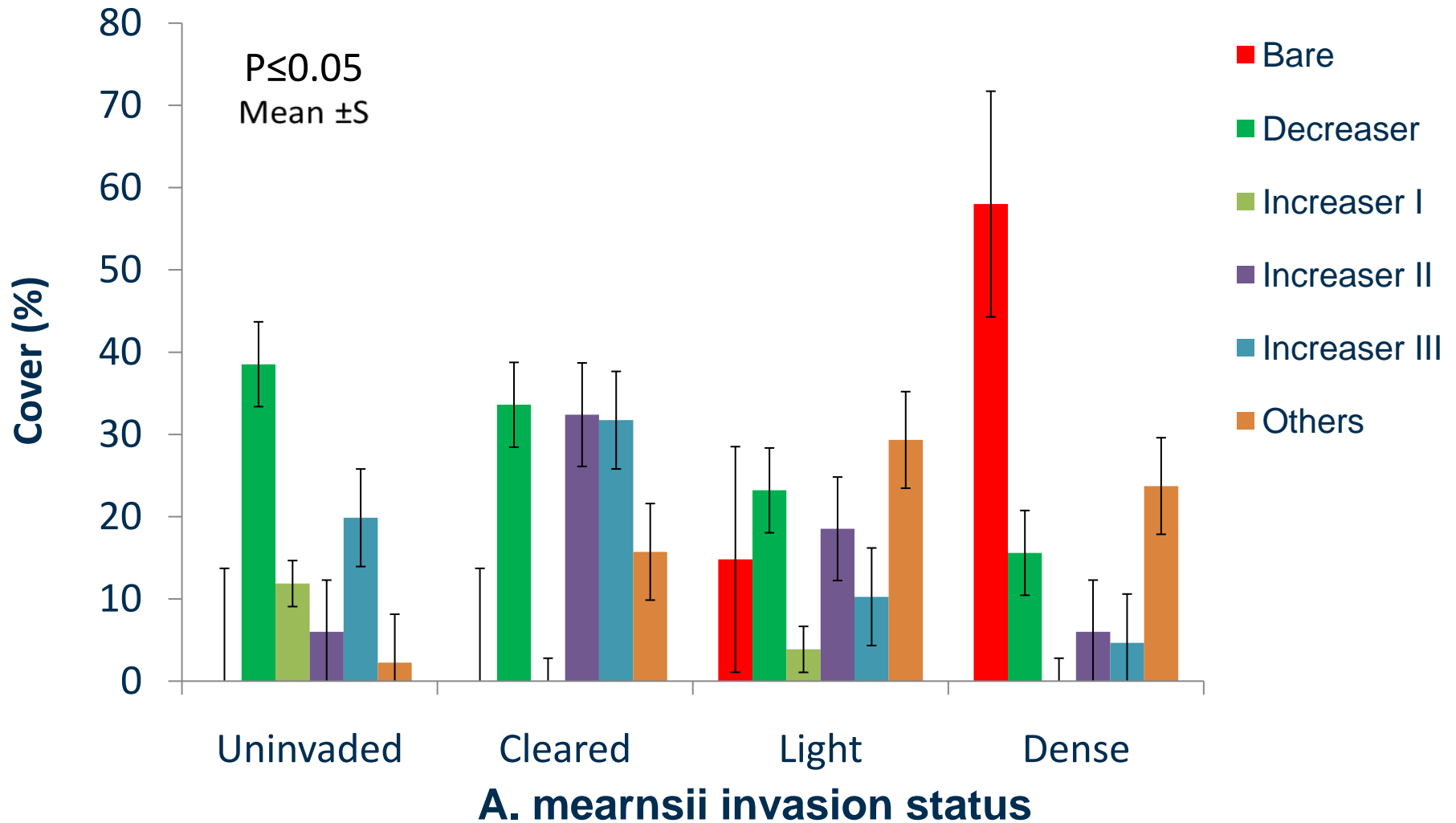
Increaser III: increase with selective grazing

Others: grass invaders, forbs and serge

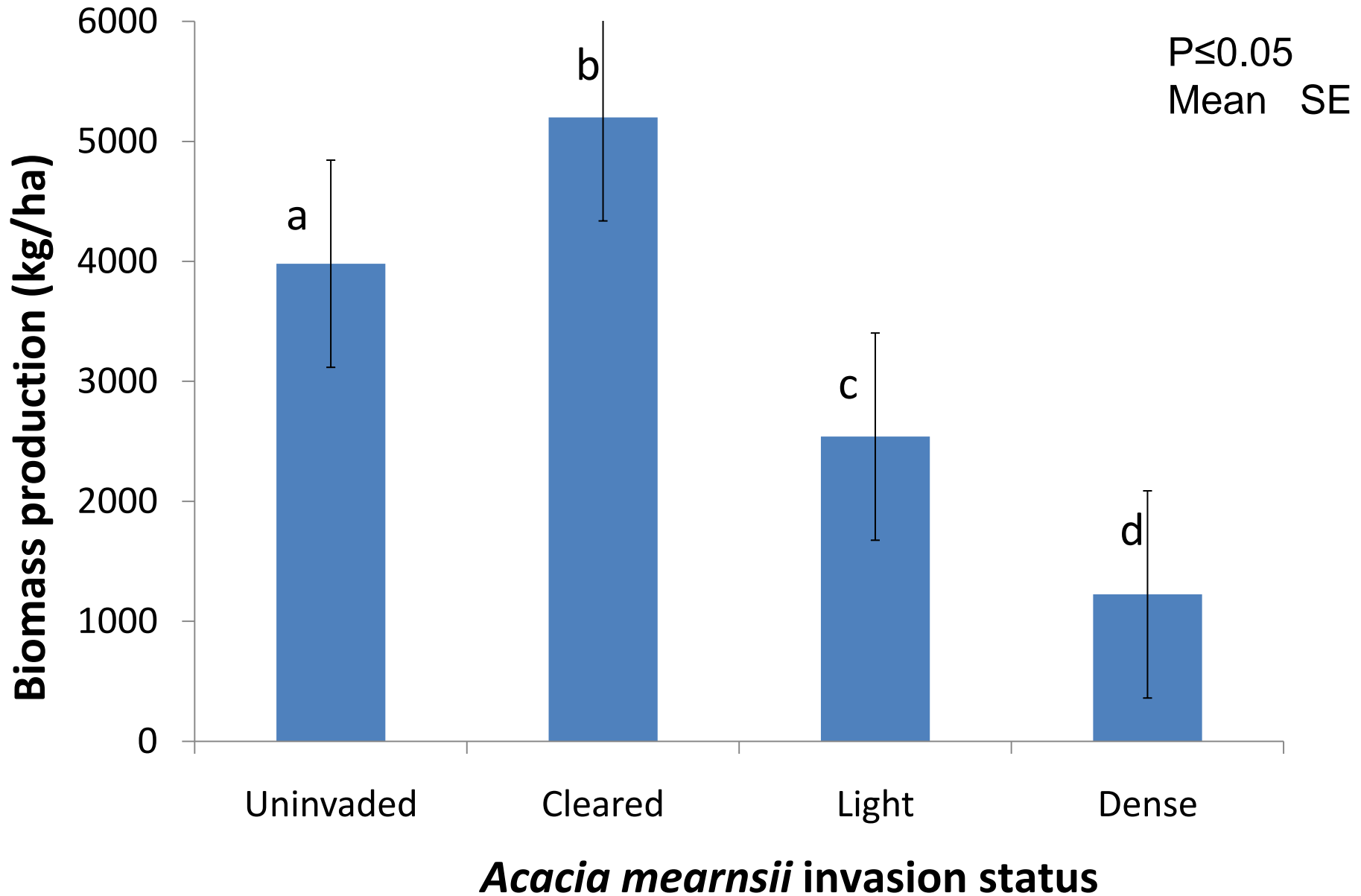
Bare: refers to bare ground



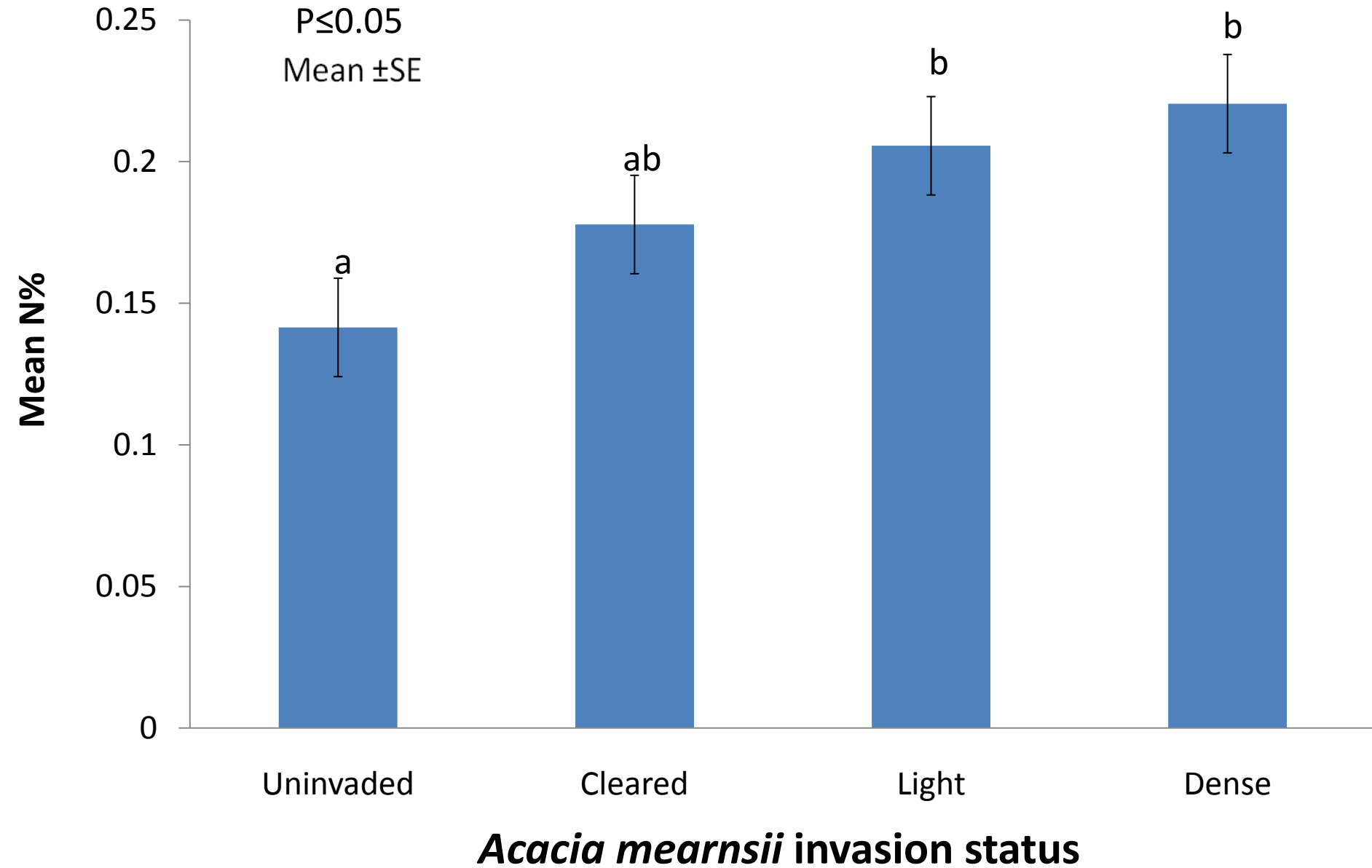
RESULTS: Grass species composition and basal cover



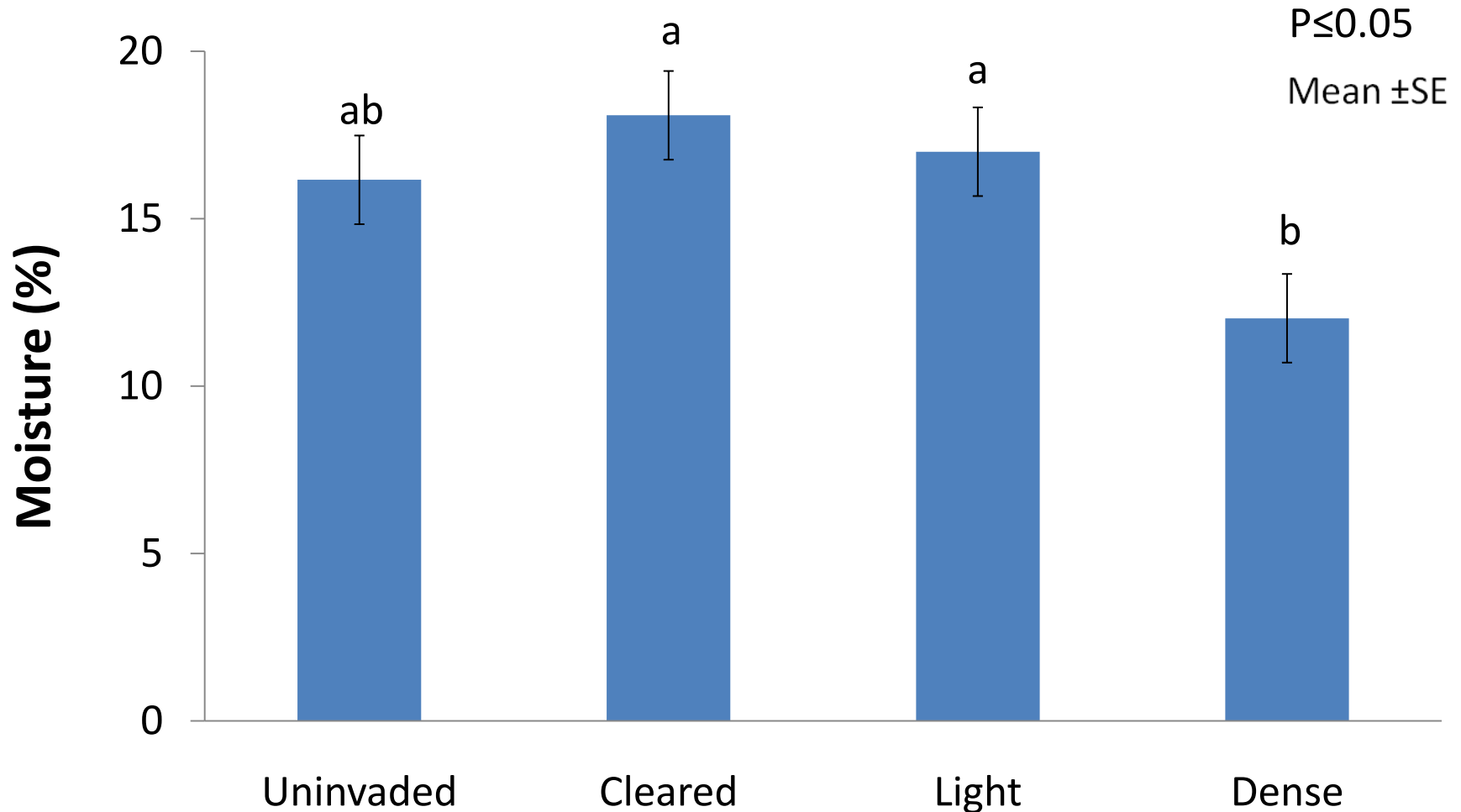
RESULTS: Biomass production



RESULTS: Soil nitrogen content



RESULTS: Moisture content



***Acacia mearnsii* invasion status**

CONCLUSIONS and RECOMMENDATIONS



Conclusions

- High density invasions of *A. mearnsii* have negative effects on rangelands productivity
- Removal of *A. mearnsii* improves grazing resources: nitrogen content, moisture, etc.

Recommendations

- Programmes need to be developed to assist emerging farmers with clearing invasives so as to enhance the speed recovery and to improve likelihood of success

Acknowledgements



- Biodiversity and Ecosystem Services (CSIR)
- Field assistant: Asanda Yaphi
- Donhe research station: Pasture Research Section
- Farm managers: Stanhope, Siyothula and Krause's farm
- Department of Agriculture Stutterheim

Thank you for your attention

