EVALUATION OF GRASS SPECIES DIVERSITY, FITNESS AND ABUNDANCE IN COAL MINE REHABILITATED AND NATURAL AREAS

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INTRODUCTION

- Coal mining destroys the environment and soil structure
  - affects seed germination and seedling establishment
  - therefore, this leaves a lot of land requiring rehabilitation
- Various grass species have been used in rehabilitation programmes

Aim: To assess species distribution on mine rehabilitated and natural sites

MATERIAL AND METHODS

- **Site: Mpumalanga Province-coal mining area**
  - **summer rainfall:700 mm**
  - **temperature:12ºC to 29ºC**

Transect method:Rehabilitated and Natural site

3 Transects= 100m, observations= 0.5m^2, Interspaced =20m

0.5m^2	0.5m^2	0.5m^2	0.5m^2	0.5m^2

Rehabilitated site

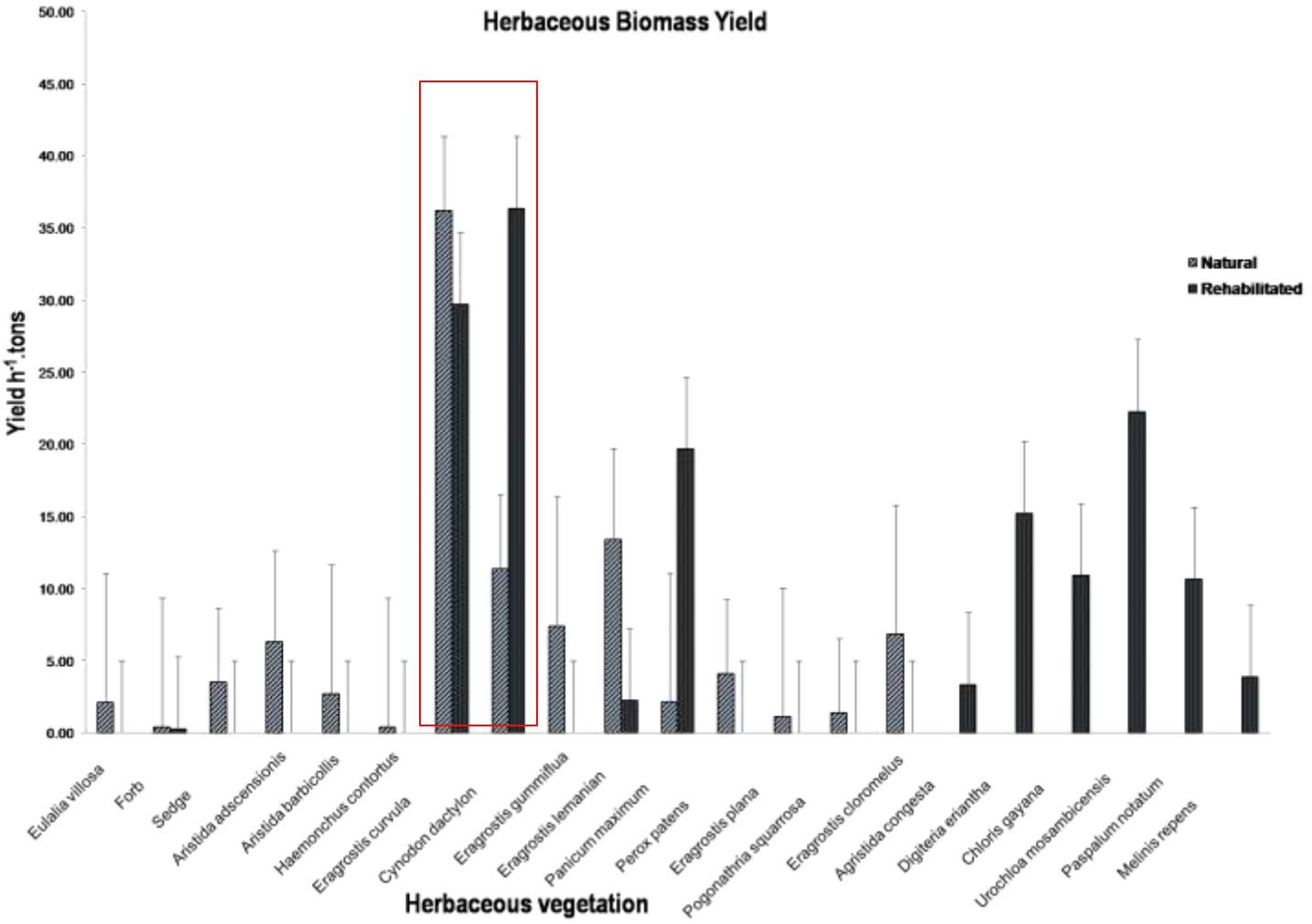
Natural site

RESULTS AND DISCUSSION

Table 1: Mean differences for grass species frequency, leaf and tiller numbers of dominant species in the rehabilitated and natural site.

SPECIES NAME	SITES					
	REHABILITATED			NATURAL		
	Tiller numbers (tillers . plant^{-1})	Leaf numbers (leaves . plant $^{-1}$)	Frequency (%)	Tiller numbers (tillers . plant^{-1})	Leaf numbers (leaves . plant $^{-1}$)	Frequency (%)
Aristida congesta	---	---	---	17.00 ± 3.99^{a}	43.00 ± 16.67^{a}	11 ± 5.69^{a}
Cynodon dactylon	2.33 ± 3.24^{a}	12.67 ± 12.76^{a}	32.3 ± 7.58^{a}	7.00 ± 3.99^{b}	24 ± 11.79^{bc}	32 ± 12.66^{ac}
Eragrostis curvula	11.00 ± 2.80^{b}	35.75 ± 11.05^{ab}	35.75 ± 15.69^{a}	7.33 ± 2.30^{b}	33.00 ± 9.62^{b}	41.5 ±11.87^{bc}
Eragrostis gumiflua	---	---	---	4.00 ± 3.99^{b}	16.00 ± 16.67^{c}	22.7 ± 9.65^{ac}
Urochloa mosambicensis	6.00 ± 3.97^{b}	93.50 ± 15.62^{b}	19.67 ± 9.89^{a}	---	---	---

RESULTS AND DISCUSSION



CONCLUSION AND RECOMMENDATIONS

- *E. curvula* is the best performing grass and it seems to be ideal for rehabilitation programs
- Interspecific variations in grass species germination under unfavorable conditions
  - They differ: morphologically and physiologically
- However, some respond differently
  - Lack sequestration and compartmentalization of toxic ions

THANK YOU

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