New approaches to grassland rehabilitation

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Grasslands, Timber and Fire
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Grassland rehabilitation: why bother?

- Sometimes: genuine desire (aesthetics, conservation, etc) to return an area to what it was historically
- Often: pragmatic need or legal obligation to transform the area to a grass-dominated community

Easy enough – with some effort can create seedbed conditions suitable for the germination of common pasture species, and these are often persistent, especially with some help (e.g. fertilizer, etc)

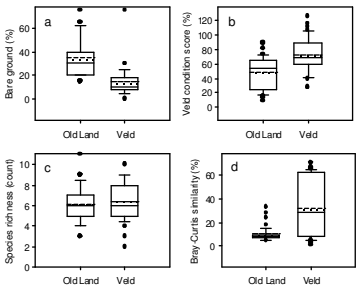
→ Sourveld Grasslands

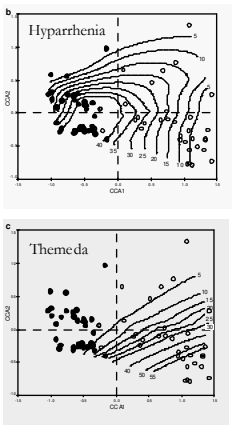
Transformation of sourveld grasslands – hypotheses and approaches

- Sourveld grasslands cannot rest-recover following transformation
- Transformation is the mortality of living plants (seeds, plants) – it does not necessarily imply cultivation
- Therefore, <u>real</u> rehabilitation efforts need to focus on the re-introduction of plant propagules (seed or vegetative)
- Relying on succession, or re-seeding with pasture species, is inadequate

→ Example at Weenen

Weenen – extreme overgrazing vs. cultivation after 60 years

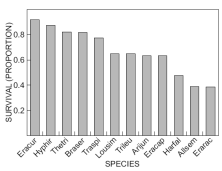




Data: Stears, Morris & du Toit IN PREP

→ Methods, Tiller prop

- Approaches:
  - Thatching
  - Seeding with indigenous seed
  - Replanting using plugs (derived from seed)
  - Replanting using plugs (derived from tillers)
- Bunchgrass: a group of tillers, each of which is potentially a propagule
  - Generally available
  - Cultivated reproduction at c 100 x per year
  - Independent of seed production (amount, season, viability, etc)



Early survival and growth of vegetatively propagated indigenous grasses in a clear-felled timber plantation in KwaZulu-Natal, South Africa
JDT du Toit

DEMONSTRATION

→ Field-scale examples

Field-scale examples

- 2 x 1 ha plots in Howick (seed plugs)
- 2 x 1 ha plots on borrow-pits on VRESAP pipeline
- Themeda expanded on average at about 200 tillers per plant per year – single tiller to large tuft in 6 months
- Plant cost – about 50c per plant produced

Conserving intact grasslands

Conserving intact grasslands

- Intact grasslands can be transported successfully
- Useful for where
  - temporary damage happens – e.g. putting pipelines through high conservation value grasslands – shift off and shift on
  - Grassland destruction where upper layer of topsoil is not needed (buildings, roads, etc)
  - Open-cast coal mining – lift it off one site and lay it on another (may even sort out compaction problems)
- Higher cost initially, but may largely negate all subsequent post-disturbance rehab costs, and cheaper in the long run

Grassland or Forest?

- Forest/grassland matrix. If everything has been totally changed, does it matter which we return it to?
- "Forests are winners. They are really winners. They are so competitive, they are really winners" - Mike Lawes [pers comm]
- Probably a lot easier to plant a forest that will resemble a historic forest than a grassland that will resemble a historic grassland
  - Far fewer plants
  - Fewer species
  - Precursors (e.g. *Pleiranthus* etc) can form robust nurse crops to compete against weeds, and support trees

Summary

- Re-introduction of grasses, because they won't come back naturally
- Grasslands can be lifted and moved
- Forests are an option

Thank you