

# Reflections on land use in KwaZulu-Natal, 1932 - 2015

Kelson Camp  
GSSA 50<sup>th</sup> Congress

# INTRODUCTION

## First experience

- 1957 – emphasis on farm planning
- Initial actions due to 1932/33 drought – “drying up the country”
- Reaction was a Parliamentary Resolution
- Drakensberg Conservation Area (Estcourt)

# LAND USE PATTERNS

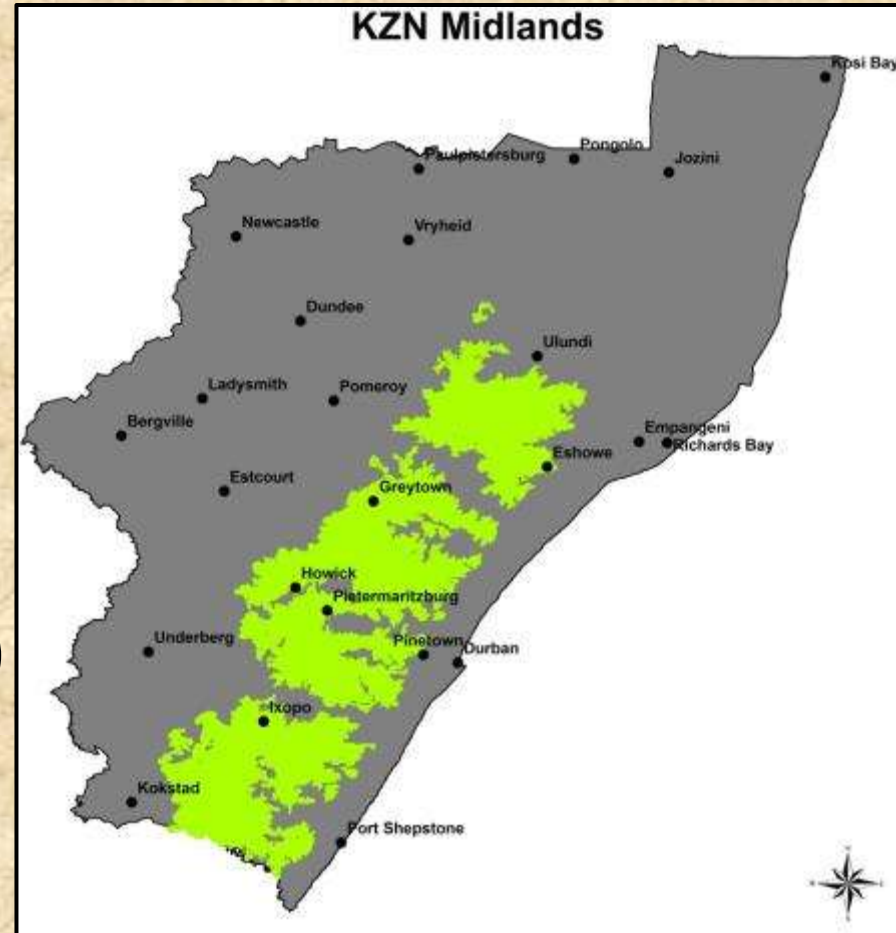
## MIDLANDS

### ➤ Early 1900s

- grasslands extensive
- Beef and dairy
- Cultivation of crops (maize)

### ➤ 1950s

- Timber (gum, pine, wattle, poplar)



# MIDLANDS

**1960s**

➤ Sugar cane



# MIDLANDS

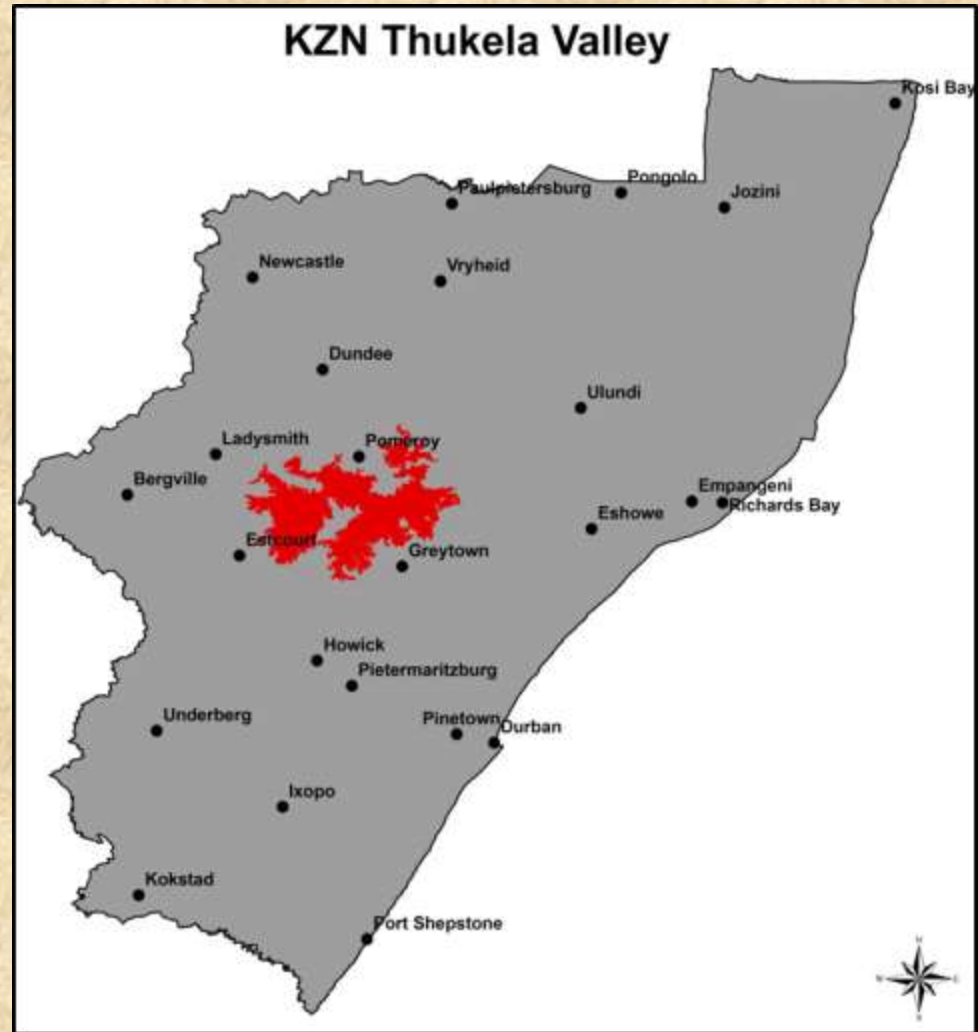
Loss of grassland and deterioration of quality –  
NGONGONI (*Aristida junciformis*)



# LAND USE PATTERNS

## THUKELA VALLEY BUSHVELD

*“What now remains compared with what then existed is like the skeleton of a sick man, all the fat and soft earth having been washed away, and only the bare framework of the land being left”*  
(Plato, 427 – 347 BC)



“...what then existed ...”



Aerial photo: 1 Km<sup>2</sup>



“...only the framework  
of land being left.”

# THUKELA VALLEY BUSHVELD

**Pentz, 1940 – 46 000 ha**

- 19% bedrock
- 33% seriously degraded

**Camp, 1995 – 86 000 ha**

- 18.3% bedrock
- 23% degraded



**WHY?**

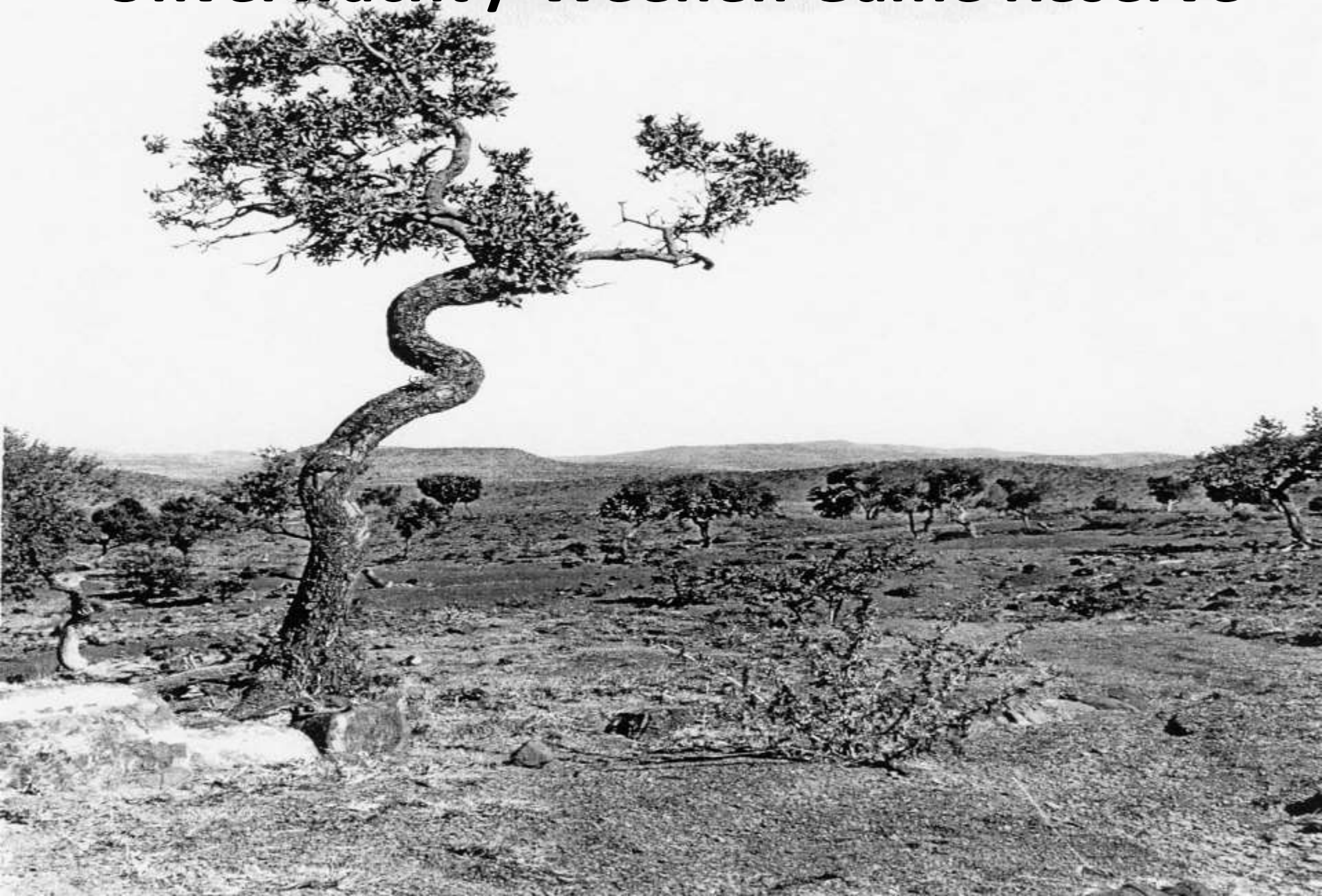


# THUKELA VALLEY BUSHVELD

- **Labour farms** – 54% of farms
  - 1.6 camps / farm
  - No boundary fences
- **Actual stocking rate**
  - 2.6 – 3.4 ha/AU
- **Best grazing capacity**
  - 6.5 ha/AU



# Onverwacht / Weenen Game Reserve



# Onverwacht / Weenen Game Reserve

- Expropriated 1948
- Rehabilitation research 1950
  - 55 major engineering works
  - Hundreds of stone packs



# Onverwacht / Weenen Game Reserve

15 monitoring sites – 1979

**Dolerite** →  
excellent recovery



← **Shale & sandstone**  
poor to none

# Onverwacht / Weenen Game Reserve

## Dolerite vs Shale recovery

### *Themeda triandra* abundance

	1979	1985	1997
Dolerite	69%	80%	82%
Shale	0%	0%	1.4%

### Tree density

	1979	1997
Dolerite / sandstone	611 TE/ha	1 044 TE/ha
Shale / sandstone	433 TE/ha	5 698 TE/ha

# LAND USE PATTERNS

## “OLD LANDS” TRIANGLE

1900's:

arable = flat enough to plough

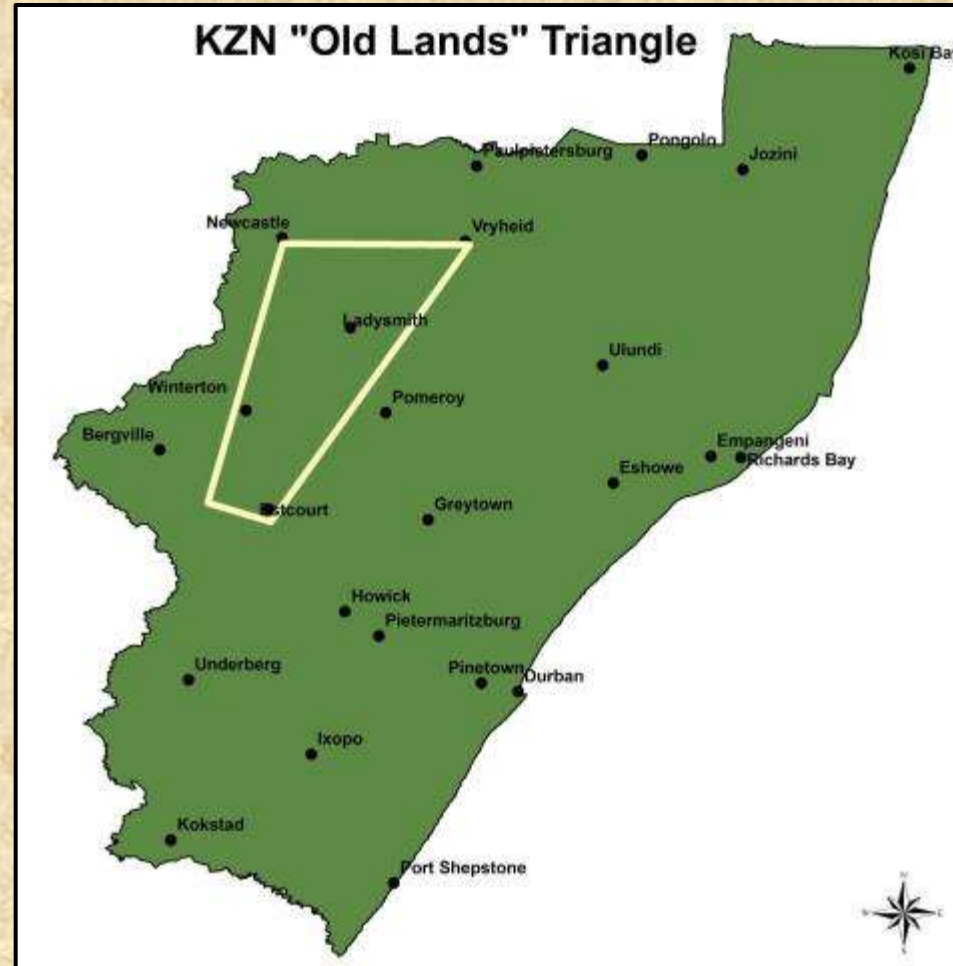
**BUT**

Poor soils + erratic rainfall =

**crop failures!**



Estcourt soil form



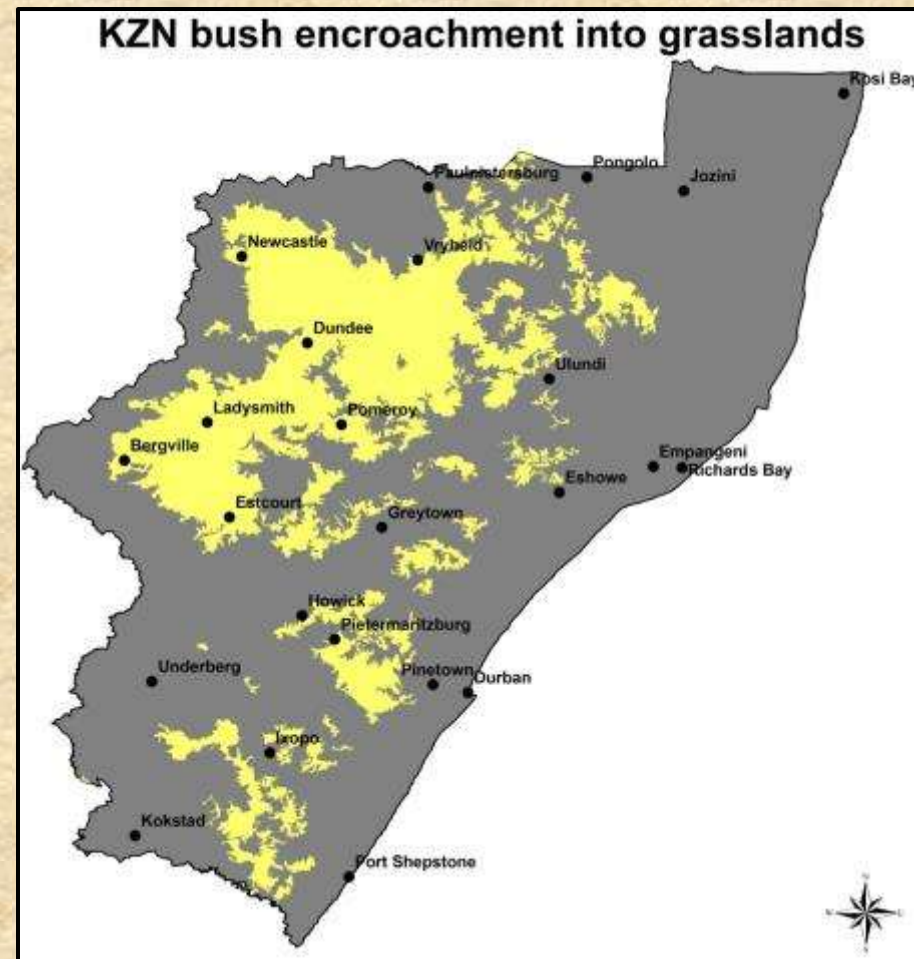
# “OLD LANDS” TRIANGLE



Plagio-climax – *Hyparrhenia hirta*  
(van As, du Preez, Brown & Smit, 2012)

# BUSH ENCROACHMENT INTO GRASSLANDS

*Acacia* spp have & are encroaching into our grasslands





# LAND USE PATTERNS

## BUSH ENCROACHMENT INTO GRASSLANDS

- Edwards, 1967:
  - 60% occurred 1900 – 1967



*Leucosidea sericea* invasion



*Acacia sieberiana* fence line management  
contrast

# WHAT ROLE DID WE PLAY?

Serve the farmers  
**OR**  
conservation of natural resources



# PROGRAMMES ADOPTED

**From 1972 ....**

- Create awareness = concern for the problems

## **Cultivated land protection**



# CULTIVATED LAND PROTECTION

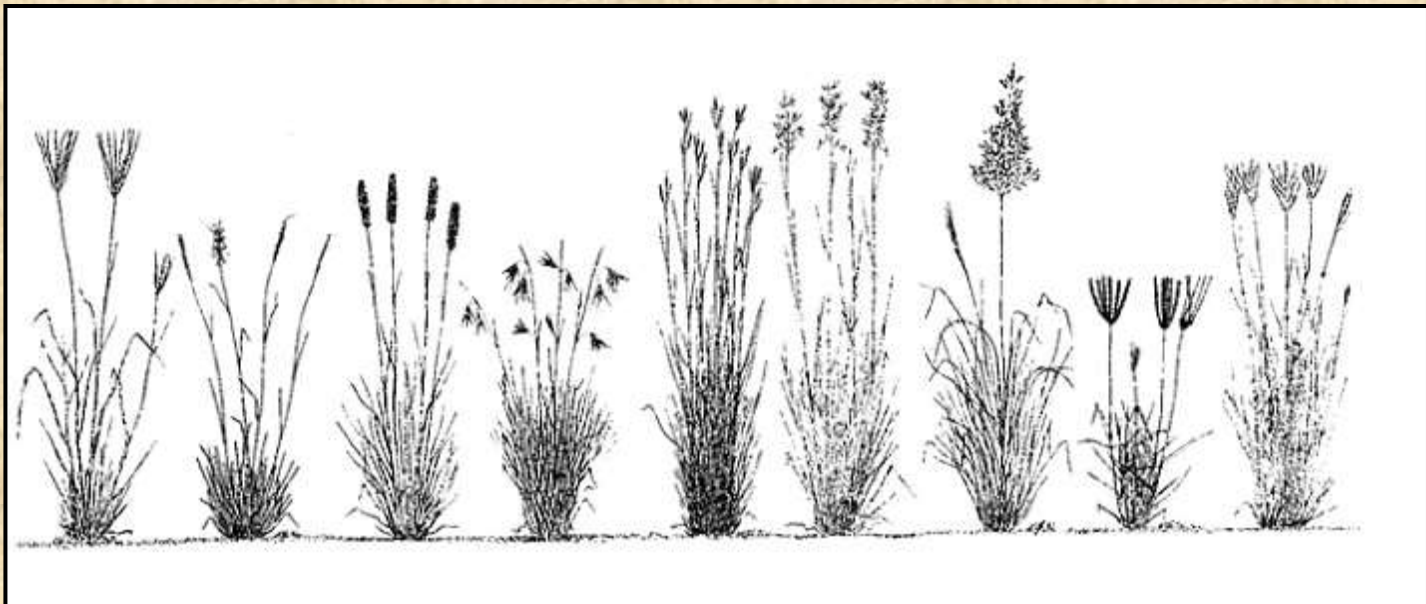
- Selected catchments
- Planned run-off control systems
- Implemented surveys



# PROGRAMMES ADOPTED

## Veld programmes (NGS)

- Plan 5 stage programmes
  - Species identification
  - Veld condition assessment



# VELD PROGRAMMES

## ➤ Teaching process

- Subjective measurements: pedastalling, sediment beds, capping

## ➤ Management principles

## ➤ Planning farm

## ➤ Herd / Flock management



# PROGRAMMES - RESULTS

**Success rate varied**

Dedication, enthusiasm, attitude

**OR**

**FORGET IT!**

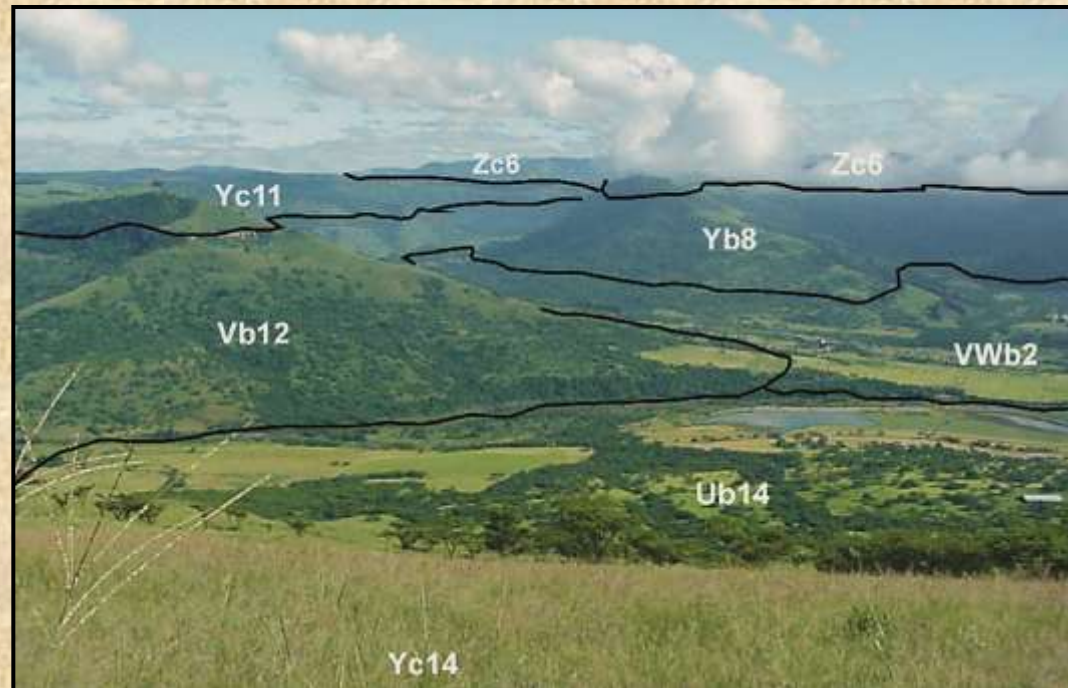
- Farmer groups doing own veld condition assessments
- Disciples of systems
- Management principles (Dr AJ Aucamp)

# RESULTS

## BIORESOURCE PROGRAMME

Dr C. MacVicar, 1991

- Ecological units required
- Vegetation types insufficient without climate and soil information
- Mapped units to provide information for both extension and research





# BIORESOURCE PROGRAMME

- **Soils** - South African Land Types
- **Climate** - Dr R. Schulze's climate data
- **Vegetation** – adapted from Edwards, Moll, Acocks studies & Camp's assessments.
- **Topography** – Surveyor General Maps.



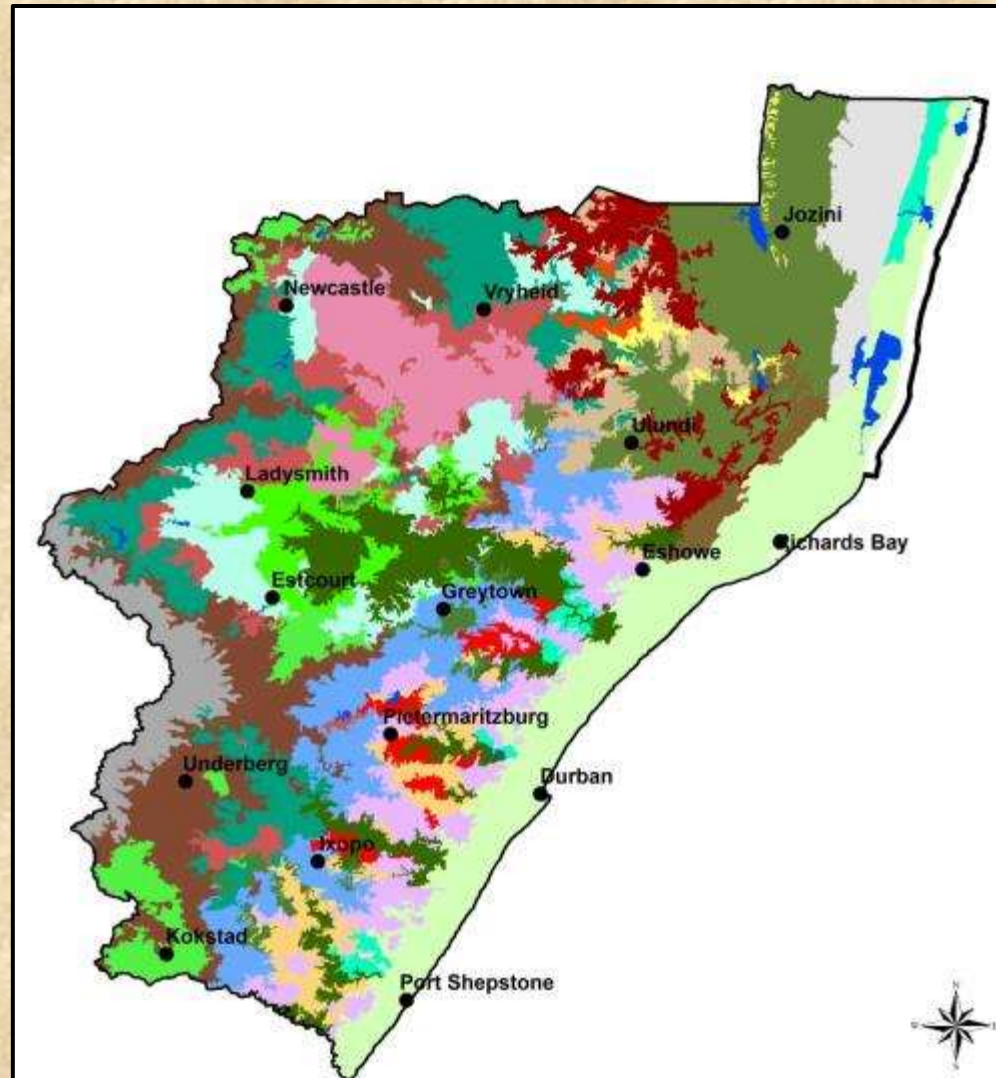
# BIORESOURCE PROGRAMME

## 1991 – 1999

- Mapped 600 Bioresource Units (BRU)
- Grouped BRU's with same vegetation types to form 23 Bioresource Groups (BRG)

## Revision – 2009 – 2015

- 41 BRG's



# CONCLUSION

## IF ONLY!

### Monitoring / perceptions

- Veld condition
- Erosion
- Bush encroachment

acknowledgements & thanks:  
Michelle Keith

