

EXPERIMENTAL BURN PLOT TRIAL (EBP's)

Fascinating glimpses covering 47 years of effects of season and frequency - Kruger National Park

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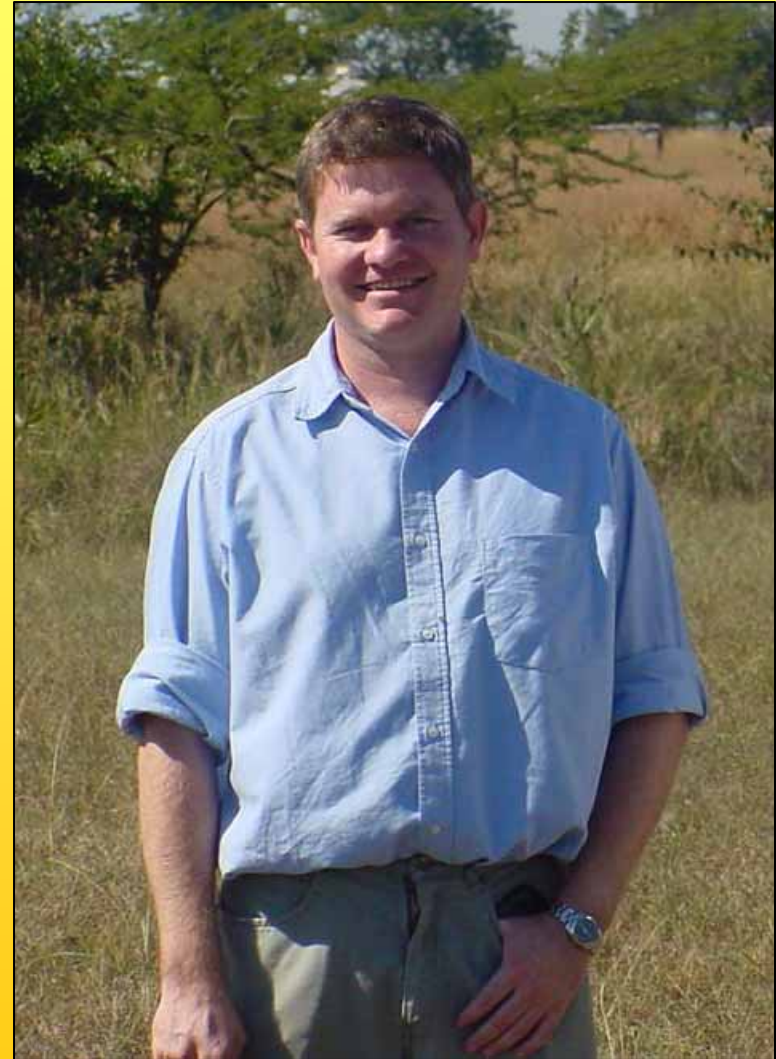


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Lynne Trollope



Justin du Toit



ORIGIN OF THE EBP TRIAL

- From 1946 – 1954
– *de facto* Fire Suppression Policy in the KNP
- Result of the passing of the Soil Conservation Act 1946 linking soil erosion to injudicious use of fire in South Africa
- Was appropriate policy in the arid *El Nino* decade of the 1940's
- Was inappropriate fire policy for the moist *La Nina* era of the 1950's

RESULTS OF FIRE SUPPRESSION

- **Grazing became unpalatable and moribund**
- **Bush encroachment**
- **Increase in large scale high intensity wild fires**

Wild Fires – Kruger National Park 1953 – 25% Park burnt

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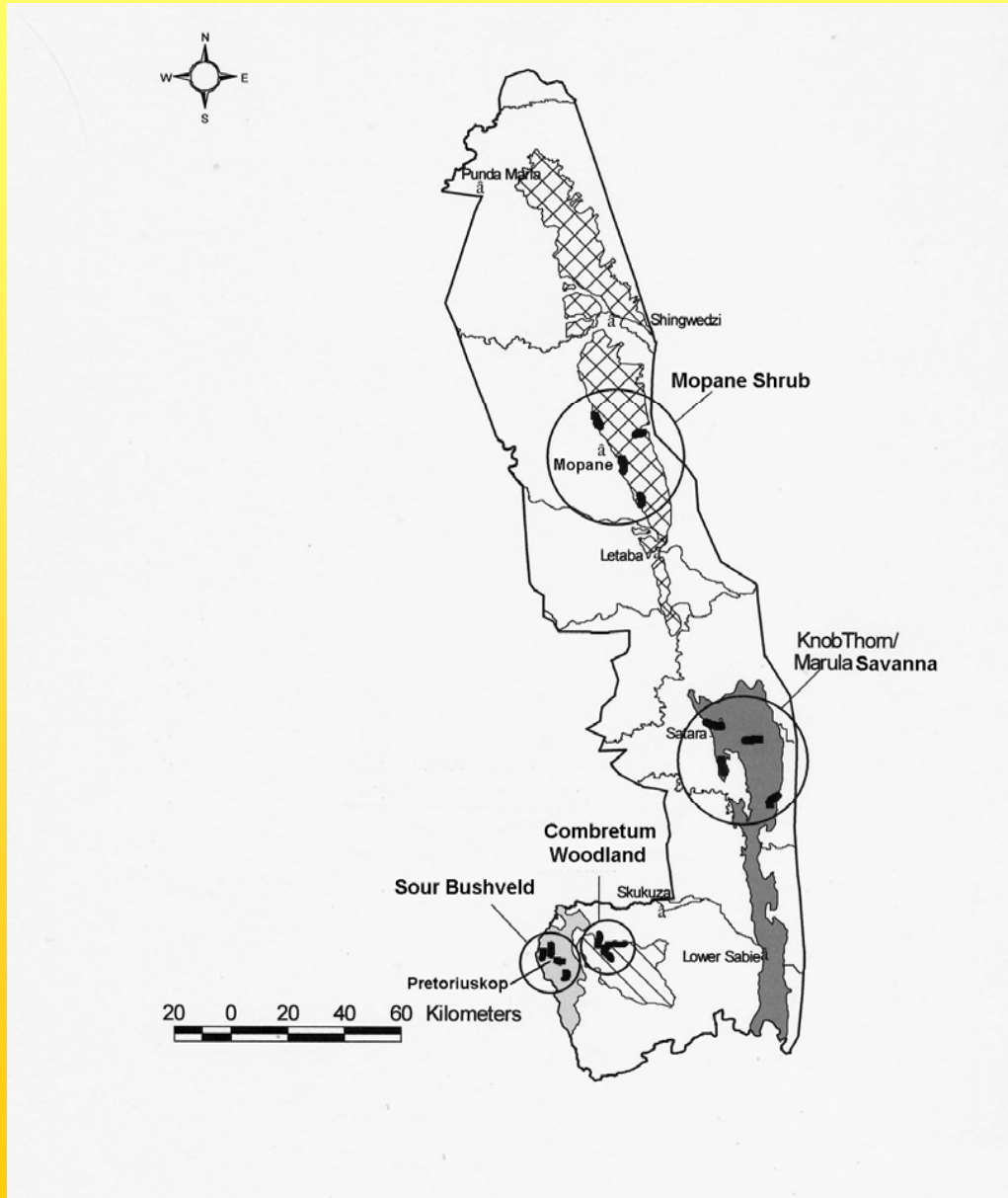
Provided motivation for initiating EBP trial in KNP

EBP TRIAL INITIATED IN 1954

Objectives:

- **Determine effects Season & Frequency Burning on range condition i.e.:**
 - **Forage potential**
 - **Fuel potential**
 - **Resistance to soil erosion**

Location – Experimental Burn Plot Trial

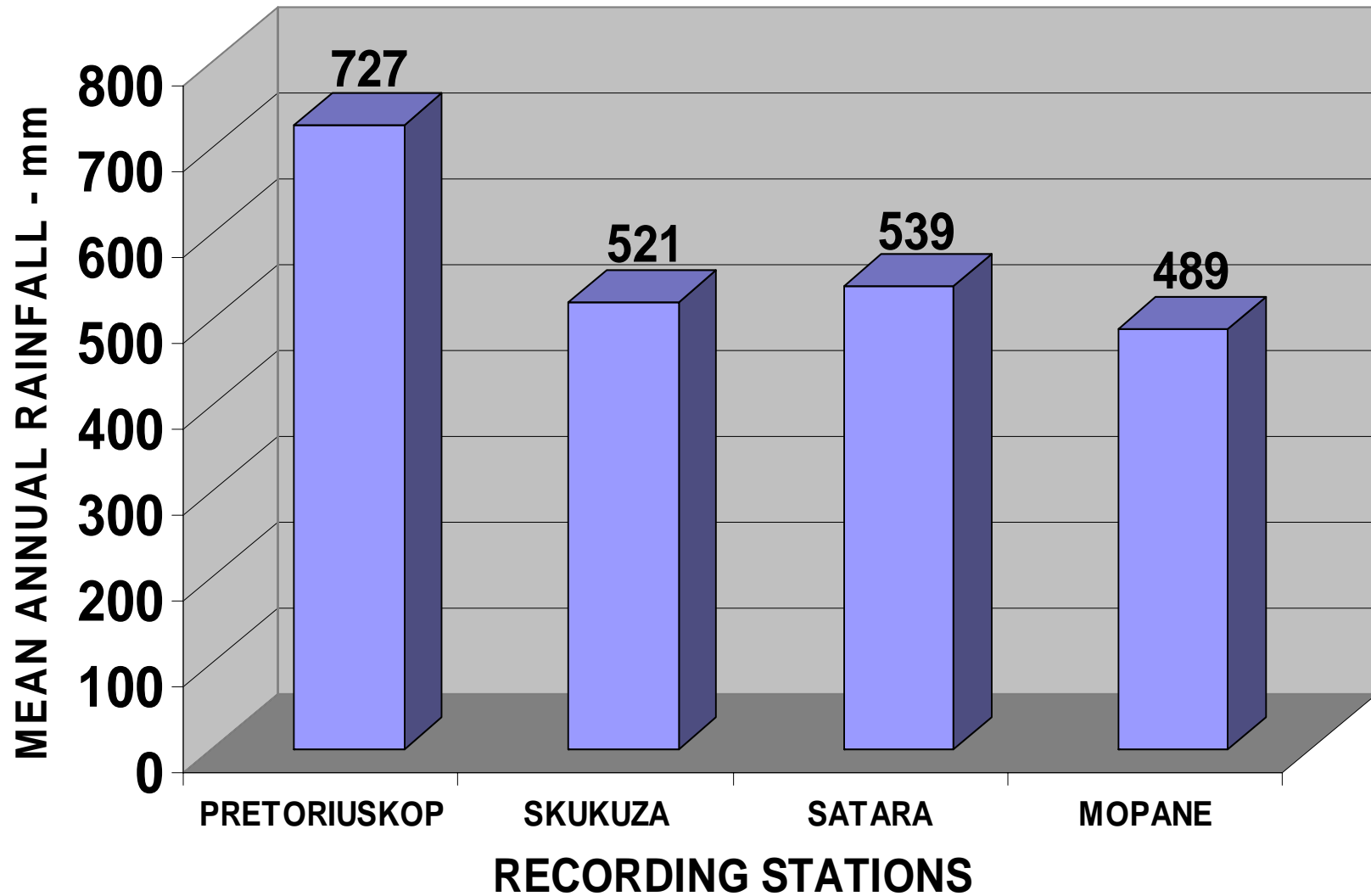


- **Four Replicates in major vegetation landscapes;**

208 Plots – 7 ha;

Total Area – 1500 ha

EBP RAINFALL GRADIENT Kruger National Park



TREATMENTS

SEASON OF BURN

- October – spring
- December – early summer
- February – late summer
- April – autumn
- August – winter

FREQUENCY OF BURN

- Biennial
- Triennial → Growing Season
- Annual
- Biennial → Winter
- Triennial

MEASUREMENTS

GRASS SWARD

- Botanical Composition
- Basal Cover

BUSH – trees & shrubs

- Botanical composition
- Density
- Structure

Initial grass and bush surveys conducted 1954
– repeated 1998 to 2001

Levy Bridge used for recording botanical composition and basal cover in EBP Plots 1954



RESULTS

Analysis of EBP Data to date:

- **Woody Vegetation – Higgins *et al* 2007**
- **Biodiversity - Grass Sward – Mendy Smith *et al* – in preparation**
- **Range Condition – Grass Sward – Trollope *et al* – in preparation**

RESULTS

- Determined treatment effects Season & Frequency Burning on grass sward i.e.:
 - **Forage potential** – allocated *Forage Factors* to different grass species
 - **Fuel potential**– allocated *Fuel Factors* to different grass species
 - **Resistance to soil erosion** – recorded *Point To Tuft Distance* in point quadrat surveys

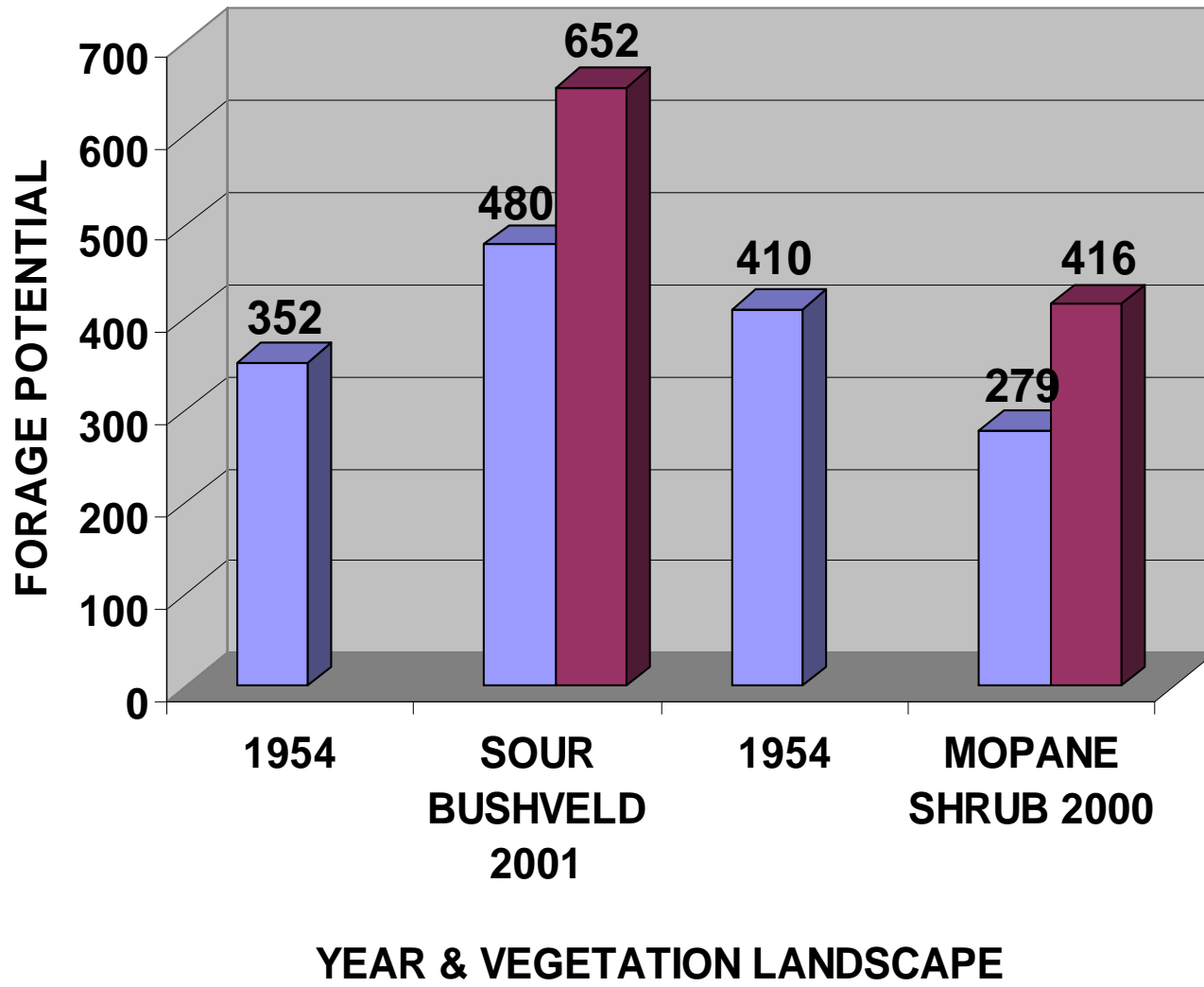
RESULTS

- Presentation limited to effects of **Fire/ Grazing** on:
 - Grass Forage Potential
 - **Not**
 - Grass Fuel Potential
 - Soil Erosion Potential
- Presentation focuses on effects **Season & Frequency** of burning/ grazing in:
 - Moist Savanna – Sour Bushveld – Pretoriuskop
 - Arid Savanna – Mopane Shrub – Mopane
- Important to recognise that treatment effects reflect Interaction of **Fire & Grazing** on the Grass Sward – not **Fire Alone**

OVERALL EFFECTS OF FIRE & GRAZING

GRASS FORAGE POTENTIAL

Moist vs Arid Savanna



■ FIRE + GRAZING
■ GRAZING

FIRE/GRAZING – MOIST SAVANNA

Grazing No Fire



Fire/Grazing



FIRE/GRAZING – ARID SAVANNA

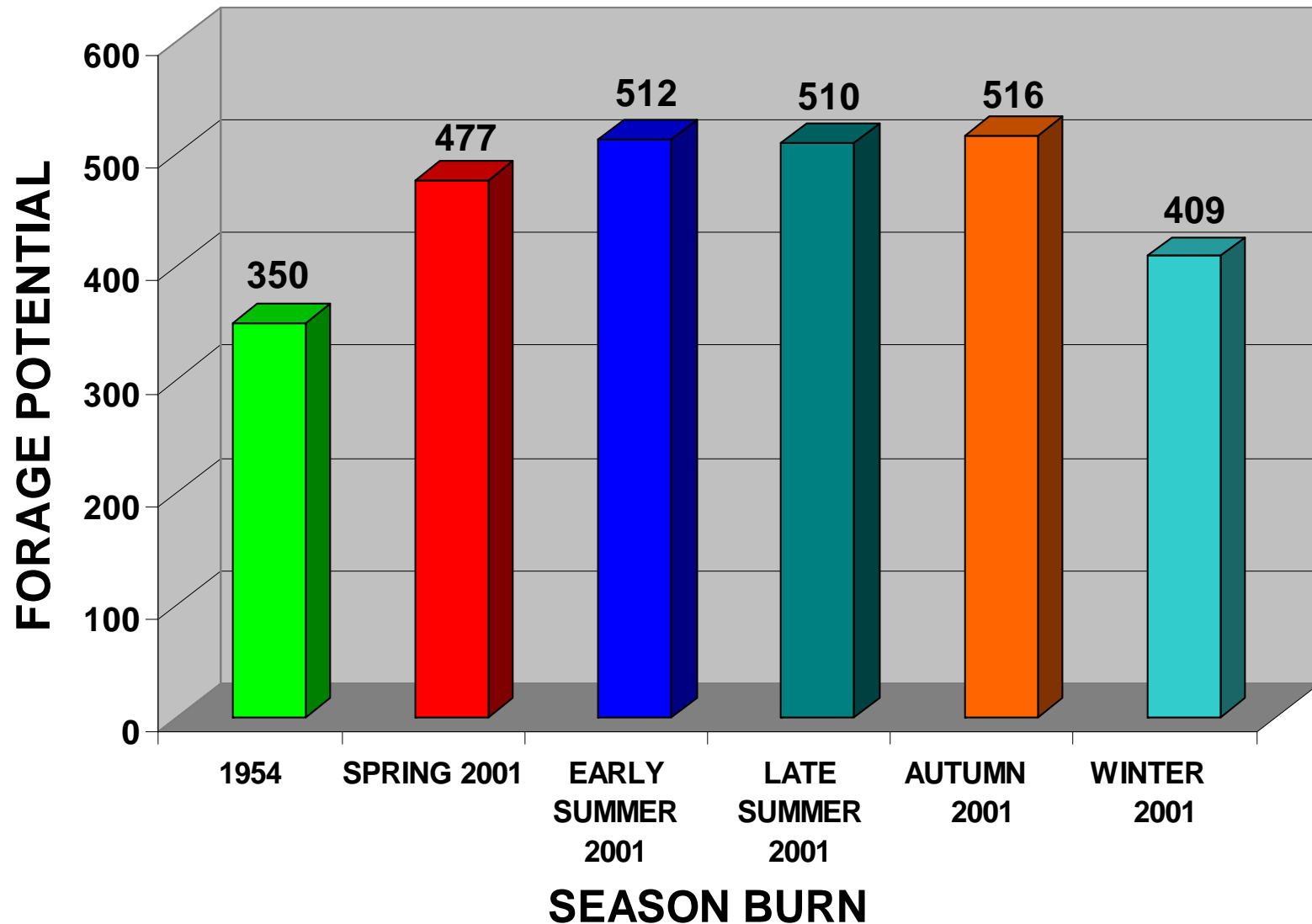
Grazing No Fire



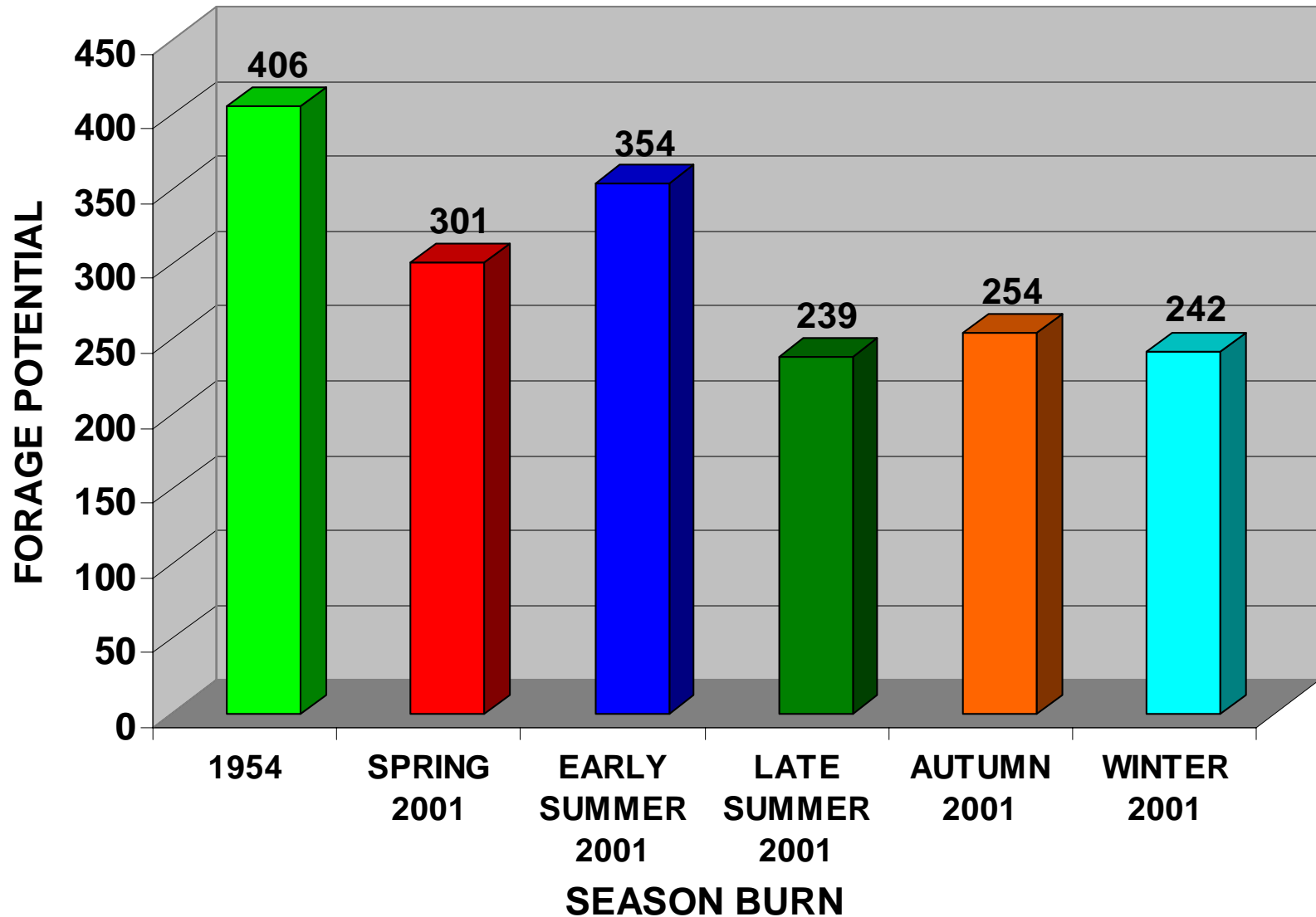
Fire/ Grazing



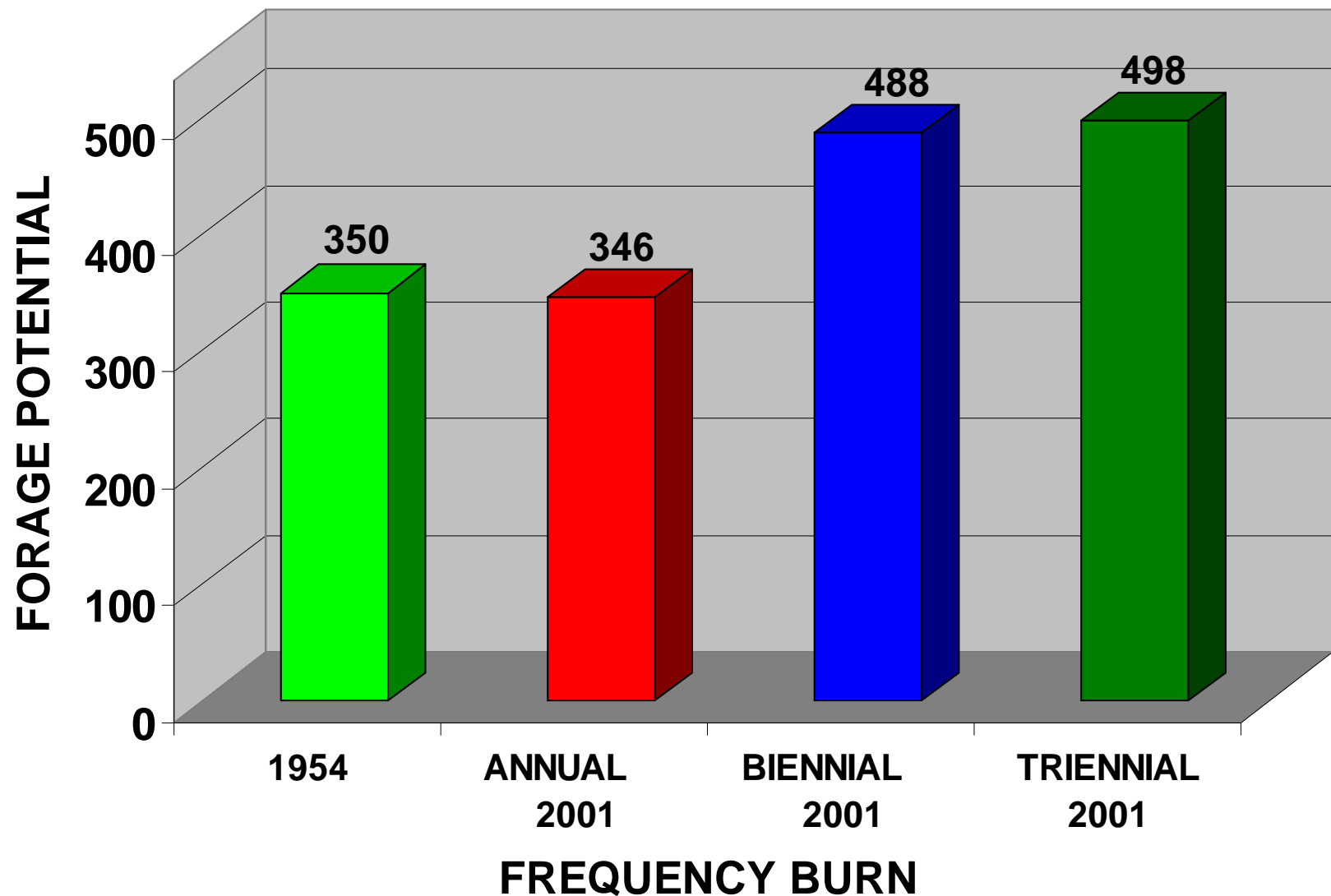
Effects Season Burning & Grazing Moist Savanna – Sour Bushveld



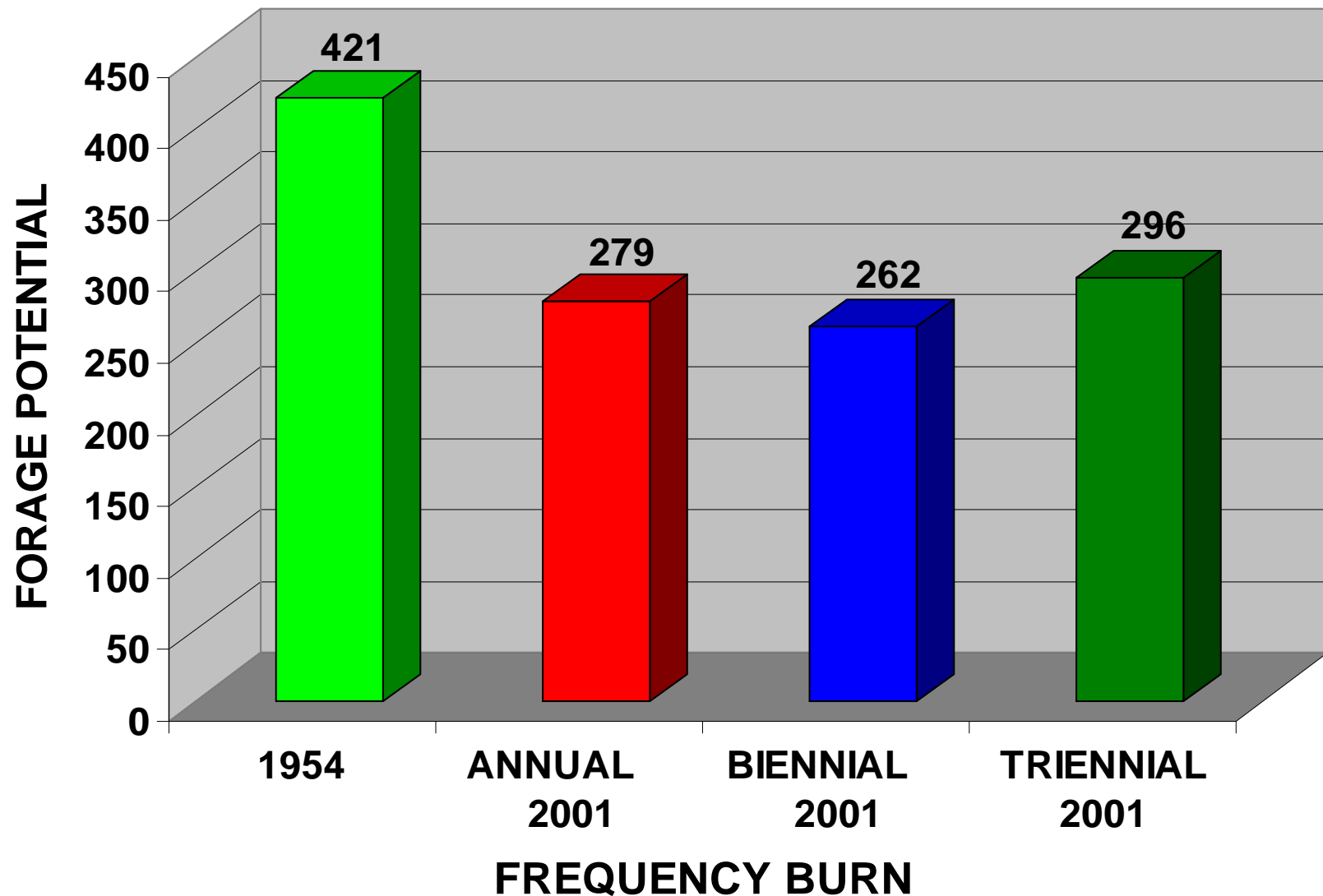
Effects Season Burning & Grazing Arid Savanna – Mopane Shrub



Effects Frequency Burning & Grazing Moist Savanna – Sour Bushveld



Effects Frequency Burning & Grazing Arid Savanna – Mopane Shrub



Effects Frequency Burning Grazing Arid Savanna – Knobthorn Savanna - 2008



**Effects Frequency Burning Grazing
Arid Savanna – Knobthorn Savanna - 2000**



GENERAL CONCLUSIONS
OVERALL EFFECTS FIRE & GRAZING
ON GRASS FORAGE POTENTIAL

- **Moist Savanna – increased Forage Potential**
 - well adapted to Burning/Grazing
 - needs burning every 2 – 3 years

- **Arid Savanna – decreased Forage Potential**
 - sensitive to Burning/Grazing
 - burning frequency >10 years

THANK YOU