ULTRA HIGH DENSITY GRAZING

Johann Zietsman

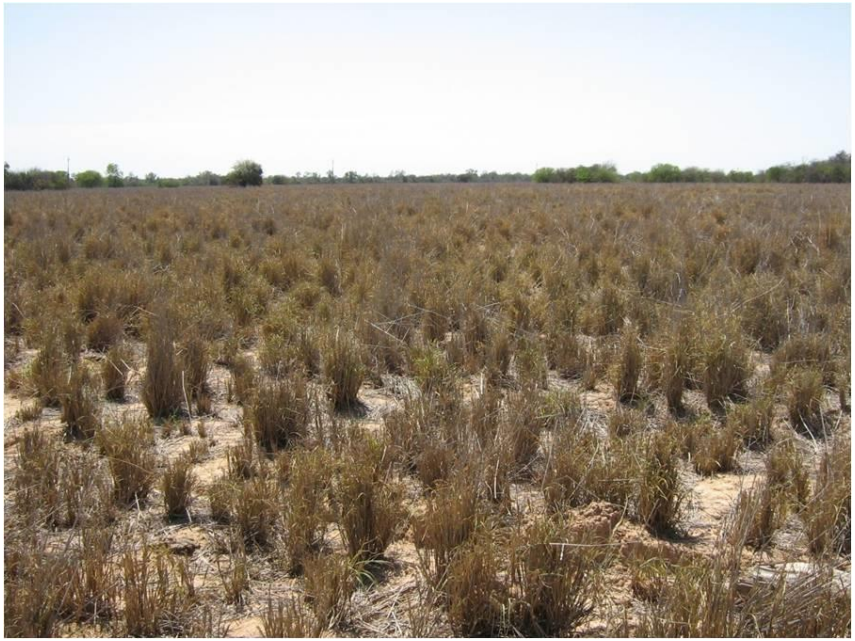
THE BIGGEST PARADIGM SHIFT ALL INVOLVED IN CATTLE HAVE TO MAKE IS: TO CHANGE THEIR GOAL FROM PRODUCTION / ANIMAL TO PROFIT / HECTARE

GRAZING CHALLENGES

1. Utilisation
2. Grass Vigour
3. Grass Quality
4. Eroding Soil
5. Water Run-off
6. Bush Encroachment
7. Soil Fertility Decline

POOR GRASS UTILISATION

Chaco, Paraguay



Choma, Zambia

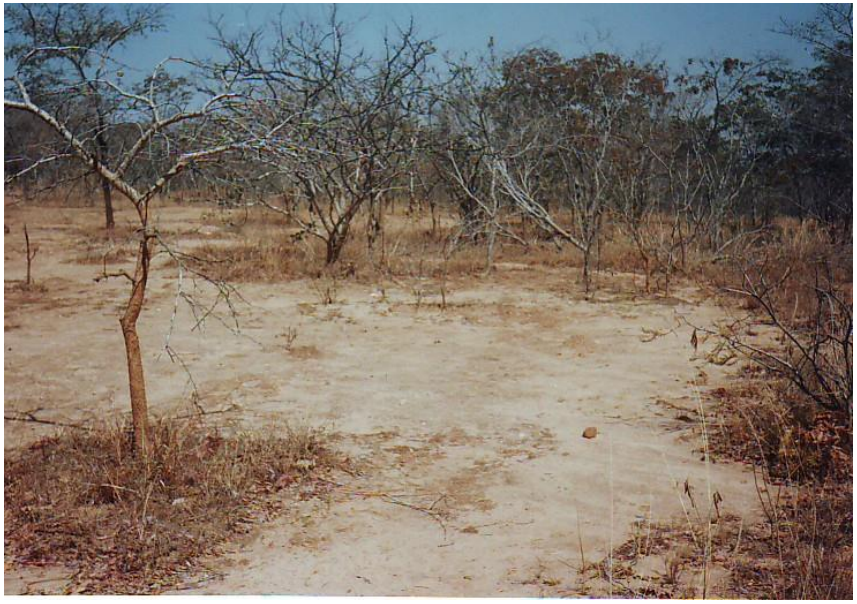
POOR GRASS VIGOUR / QUALITY

Moribund

Pale coloured grass

BARE GROUND

Karoi, Zimbabwe



Chaco, Paraguay

BUSH / WEED ENCROACHMENT

Soutpan, Pretoria

Natal Highland Sourveld

SOIL CAPPING

Desert Grasses with 600 mm rain

Weeds establishing

CONVENTIONAL MANAGEMENT TOOLS

1. REST (low stocking rate; stock removal; recovery)
2. FIRE
3. TECHNOLOGY (chemicals; mechanical disturbance)

CONVENTIONAL MANAGEMENT
addresses
SYMPTOMS
and not the
CAUSES

LAND DEGRADATION is due to a MALFUNCTIONING ECOSYSTEM resulting from:

1. **INEFFECTIVE RAINFALL**
2. **POOR SOIL AERATION**
3. **POOR SOIL FERTILITY**
4. **POOR PLANT SUCCESSION**
5. **WEAK PLANTS**
6. **POOR ENERGY FLOW**

THE SOLUTION to GRASSLAND IMPROVEMENT and RANCH PROFIT is:

1. HIGH ANIMAL IMPACT
2. NON-SELECTIVE GRAZING
3. NUTRITIONALLY ADAPTED GENOTYPES

ULTRA HIGH DENSITY GRAZING

3000 LSU / ha

10 months later

WITHOUT CONTROL of each HOOF and MOUTH RANCH MANAGEMENT is akin to a HUNTER-GATHERER situation

MANAGEMENT requires TOTAL CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL

CONTROL through HERDING

HIGH ANIMAL IMPACT

BEFORE

AFTER

NON-SELECTIVE GRAZING

NON-SELECTIVE GRAZING

NON-SELECTIVE GRAZING and NON-SELECTIVE BROWSING

NON-SELECTIVE BROWSING

IT IS A RELATIVELY EASY MATTER TO INCREASE STOCKING RATE

THE BIGGER CHALLENGE IS TO INCREASE PROFIT/HA IN LINE WITH STOCKING RATE

THIS REQUIRES NUTRITIONALLY ADAPTED GENOTYPES AND MANAGEMENT IN ORDER TO IMPROVE BODY CONDITION

EVERYTHING in CATTLE BREEDING and MANAGEMENT revolves around BODY CONDITION

BREEDING: INHERENTLY GOOD BODY CONDITION / EARLY MATURITY

MANAGEMENT: RUMEN FUNCTION, GRASS INTAKE and PRODUCTION IN SYNC WITH SEASONAL DIFFERENCES IN NUTRITION

NUTRITIONAL ADAPTATION

UNADAPTED

ADAPTED

NUTRITIONAL ADAPTATION

UNADAPTED

ADAPTED

SOIL SURFACE CONDITIONS, PLANTS and PLANT UTILISATION determine ECOSYSTEM HEALTH

SOIL SURFACE

MORIBUND GRASS and BARE SOIL

DUNG and LITTER

DEFOLIATION ESSENTIAL for GRASS VIGOUR

ANIMAL IMPACT favours GRASS

SOIL SURFACE

CAPPED SOIL

DUNG and LITTER

GRASS ESTABLISHMENT

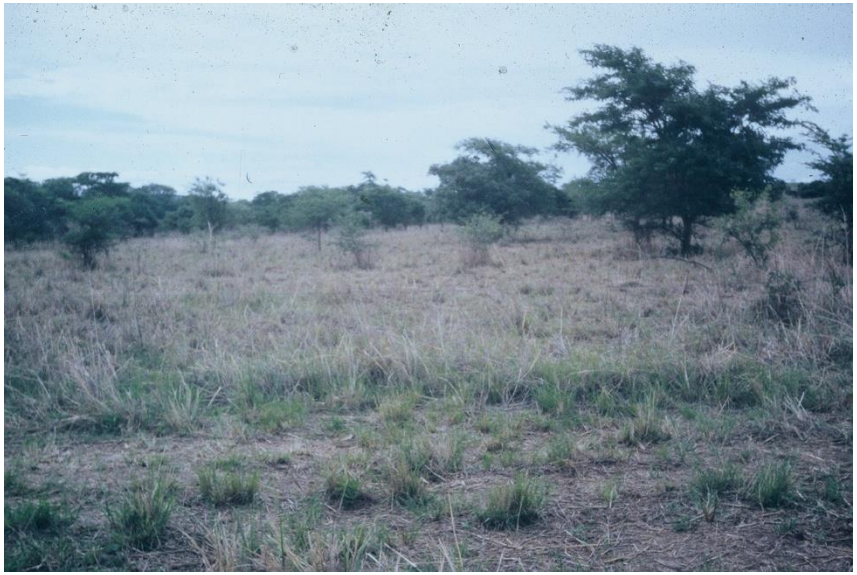
ANIMAL IMPACT

DUNG

GRAZING and TRAMPLING of MORIBUND GRASS

BEFORE

AFTER



GRASS REJUVENATION

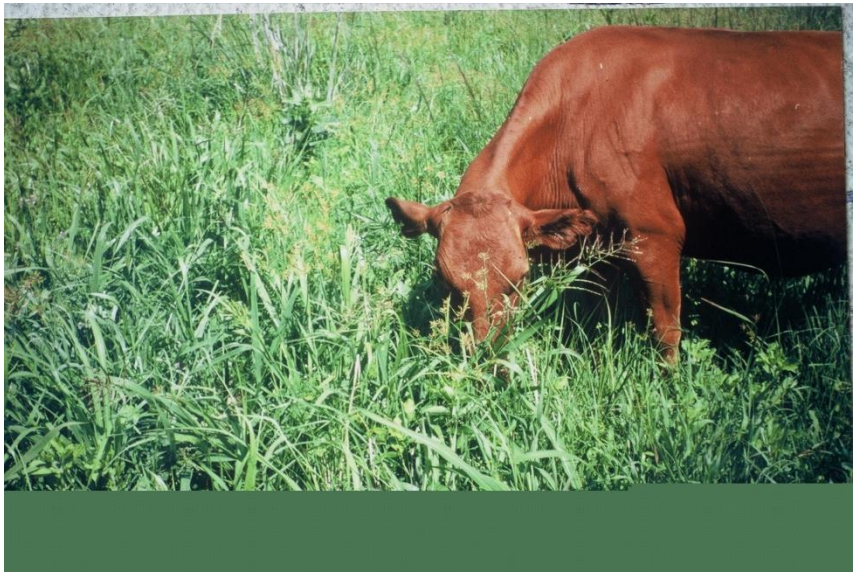
TREATMENT

RESULT

SOIL FERTILITY / AERATION

CAPPED and COMPACTED

POROUS and FERTILISED (dung; urine)



NUTRIENT CYCLING by TREES

PREVIOUSLY BARE

CORRELATION

NITROGEN from LEGUMES

LUCERNE

CROWN VETCH

NITROGEN from LEGUMES

TROPICAL GRASS / LEGUME

LEUCAENA TREE LEGUME

NITROGEN from LEGUMES

TROPICAL INDIGENOUS

TEMPERATE INDIGENOUS

NITROGEN from INTRODUCED LEGUMES

DESMODIUM SUBSERICEUM

DESMODIUM SUBSERICEUM

WHAT IS THE MOST IMPORTANT DETERMINANT OF RANCH PROFIT?

FIGURE 6.3: THE IMPORTANCE OF STOCKING RATE IN DETERMINING RANCH PROFITABILITY

RANCH SIZE = 1000 HECTARES
RANCH VALUE = $1,000,000
STOCKING RATE = 4 HECTARES / 600 KG COW

	MANAGEMENT SYSTEM ▶	CONVENTIONAL		SUSTAINABLE	
		V1	V2	V3	V4
	STOCKING RATE (RELATIVE)	X1	X2	X2	X3
	STOCKING RATE (HECTARES / 600 KG COW)	4	2	2	1.33
	COW SIZE (KG)	600	600	300	300
	PADDOCKS / HERD	4	16	2000	2000
H1	TOTAL COWS	250	500	835	1262
H2	CALVING RATE (%)	80	67	90	90
H3	BODY CONDITION SCORE (1-5)	2.6	2.4	2.9	2.9
H4	WEANING WEIGHT (KG)	250	225	150	150
H5	TOTAL WEANERS	200	335	752	1127
H6	TOTAL WEANING WEIGHT (KG)	50,000	75,375	112,800	169,050
H7	TOTAL WEANER VALUE ($)	100,000	150,750	225,600	338,100
H8	TOTAL DIRECT COST ($)	30,000	60,000	60,000	90,000
H9	TOTAL GROSS MARGIN ($)	70,000	90,750	165,600	248,100
H10	GROSS MARGIN / COW ($)	280	182	198	198
H11	GROSS MARGIN / HECTARE ($)	70	91	166	248
H12	CAPITAL: LAND ($)	1,000,000	1,000,000	1,000,000	1,000,000
H13	COWS ($)	225,000	450,000	375,750	563,400
H14	TOTAL ($)	1,225,000	1,450,000	1,375,750	1,563,400
H15	RETURN (GROSS MARGIN / CAPITAL) (%)	**5.7**	**6.3**	**12.0**	**15.9**
H16	CALVING % REQ'D FOR 5.7% RETURN (%)	80	68	55	48
H17	CALVING % REQ'D FOR 15.9% RETURN (%)	180	129	111	90

CATTLEMEN HAVE TWO OPTIONS:

PRODUCE TWINS or INCREASE STOCKING RATE

TWINS

200% Calving rate

EITHER WAY: WE NEED NUTRITIONALLY ADAPTED CATTLE

SURVIVAL OF THE FITTEST

SURVIVAL OF THE PRETTIEST

A NEW CATTLE BREEDING and MANAGEMENT MODEL IS NEEDED

WE NEED TO MIMIC NATURE

ACADEMIC INSTITUTIONS IN THEIR PRESENT FORM ARE RETROGRESSIVE

MODEL FARMS / RANCHES