Session 8: Bush encroachment II

Chair: Julius Tjelele

Does it pay to reduce *Acacia karroo*? A cost-benefit standoff.

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We compared the impact of various tree densities of *Acacia karroo* encroachment throughout different rainfall regimes on grass production and grass quality, and how this influence the cost-benefit economics of agriculture in the Eastern Cape Province, in South Africa. Tree density reduced grass production, at the same time having a positive impact (increased crude protein) on grass quality. Tree density impacts were strongly influenced by rainfall amount. Increased rainfall showed opposite impacts compared to tree density for both grass production and grass quality. High rainfall increased grass production while negatively influencing grass quality. Grass quality had a positive effect on pasture value. In all sites tree density encroachment reached densities where the cost of removal over-rode the pasture value benefits gained. Site variation in tree density and rainfall amongst the five sites, required that four different models for early prediction are compulsory. Further encroachment will affect the economic viability of bush control to be less profitable. Bush control should be maintained early on before dense stands of *Acacia karroo* are a reality. Initial encroachment of trees should be avoided.

Keywords: encroachment; influence; benefits; prediction; economic viability

Nutrient supplementation enhances shrub use by free-ranging goats: Implications for bush control in semi-arid savannas

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Large herbivores are purported to continue consuming toxin-containing forages as long as their capacity to neutralize, detoxify and excrete dietary toxins is not exceeded. This capacity depends on the availability of liver enzymes, energy and amino acid precursors. While this may explain increased intake of toxin-rich forages by herbivores supplemented with nutrients, a different effect may emerge in rangelands dominated by forages that are rich in condensed tannins which are not as degradable and readily absorbable as toxins. In a field experiment, we investigated the effects of supplementing animals with a high-energy source (yellow maize grain) and a high-protein source (soybean meal) on browse intake, foraging behaviour and diet composition of goats in a semi-arid savanna. Results confirmed our prediction that nutrient supplementation increased the proportion of time animals spent browsing and subsequently enhanced browse intake. Supplemented animals consumed more condensed tannins than animals that were not supplemented. Animals from supplemented groups tended to compose different diets from animals that received no supplement. We contend that supplements replaced the nutrients that are routinely bound and rendered indigestible by condensed tannins. Therefore, supplemental nutrients likely increased the intake of tannin-rich forages through delaying a negative post-ingestive feedback (aversion) from dietary tannins. We concluded that nutrient supplementation increased browse consumption by goats. Given that chemically defended woody plants are predicted to continue encroaching in the semi-arid savanna rangelands, these results suggest a potential for browsers and mixed feeders to serve as biological bush control agents.

Keywords: farming systems, ruminant, ungulates, nutrient-toxin interactions, livestock production

Illustration 6: Zuluwaters

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ZW02	Venison Cubes	R 60.00		R 0.00
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ZW07	Venison Leg Roast	R 90.00		R 0.00
ZW08	Venison Rolled Roast	R 90.00		R 0.00
ZW09	Venison Shoulder Roast	R 85.00		R 0.00
ZW10	Venison Bolo Roast	R 75.00		R 0.00
ZW11	Venison Silverside Roast (salted)	R 90.00		R 0.00
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ZW16	Venison Ribs	R 40.00		R 0.00
ZW17	Venison Shanks	R 65.00		R 0.00
ZW18	Venison Shin	R 65.00		R 0.00
ZW19	Venison Neck	R 40.00		R 0.00
ZW20	Venison Loin Chops	R 80.00		R 0.00
ZW21	Venison T-Bone	R 90.00		R 0.00
ZW22	Venison Liver (whole)	R 42.00		R 0.00
ZW23	Venison Liver (minced)	R 50.00		R 0.00
ZW24	Venison Kidneys	R 42.00		R 0.00
ZW25	Venison Tongue	R 65.00		R 0.00
ZW26	Venison Patties (3 x 200g or 6 x 100g)	R 36.00		R 0.00
ZW27	Venison Boerewors	R 55.00		R 0.00
ZW28	Funsunzi Wors	R 38.00		R 0.00
ZW29	Mustard and Rosemary Sausages	R 65.00		R 0.00
ZW30	Smoked Venison Sausages	R 65.00		R 0.00
ZW31	Venison Biltong	R 250.00		R 0.00
ZW32	Venison Dried Wors	R 180.00		R 0.00
ZW33	Venison Bresaola	R 250.00		R 0.00
ZW34	Warthog Bangers	R 45.00		R 0.00
ZW35	Warthog Eisbein	R 75.00		R 0.00
ZW36	Venison Meatballs	R 50.00		R 0.00
ZW37	Venison Sosaties	R 90.00		R 0.00
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