The Camel: Animal of the Future?

One perspective from Kenya

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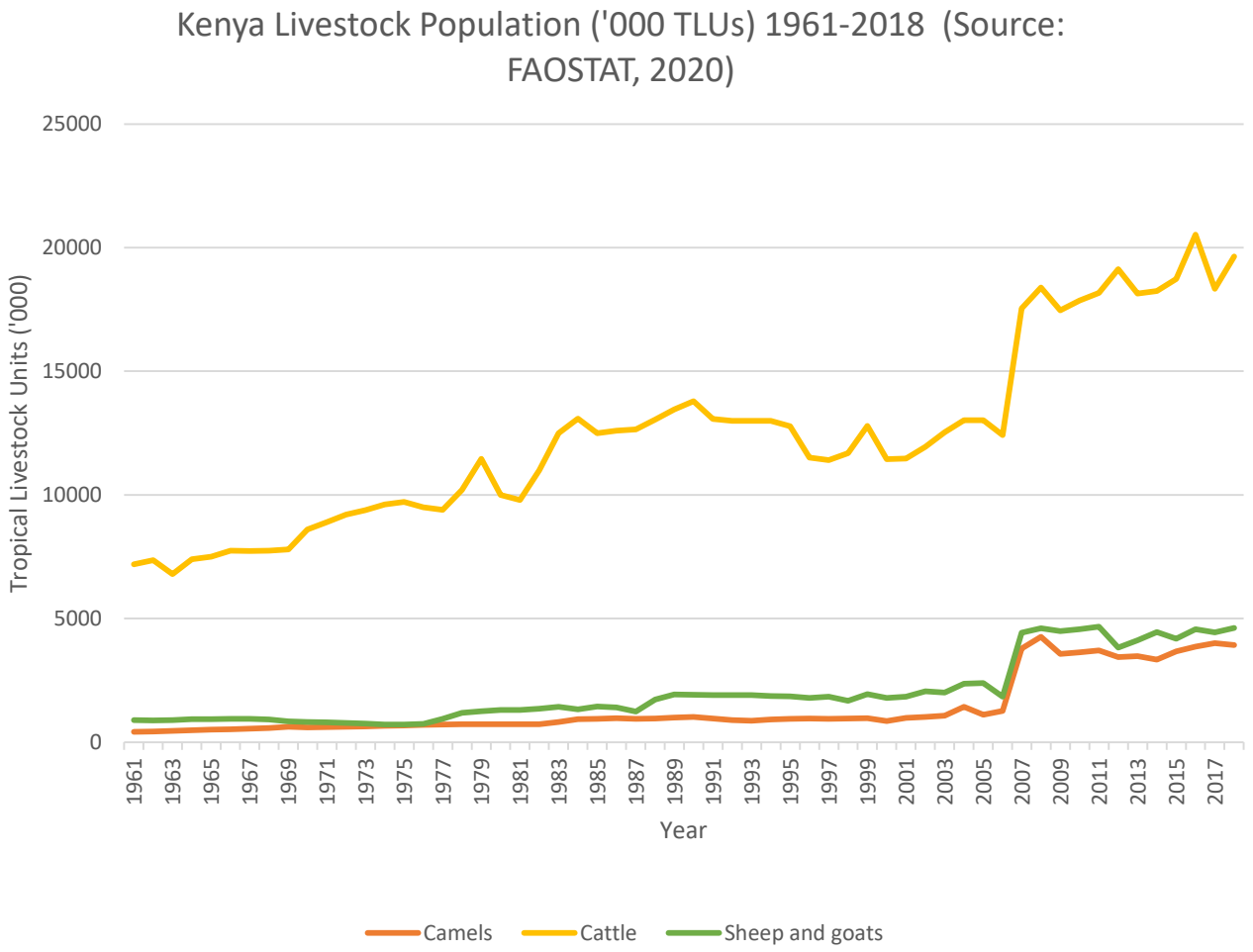
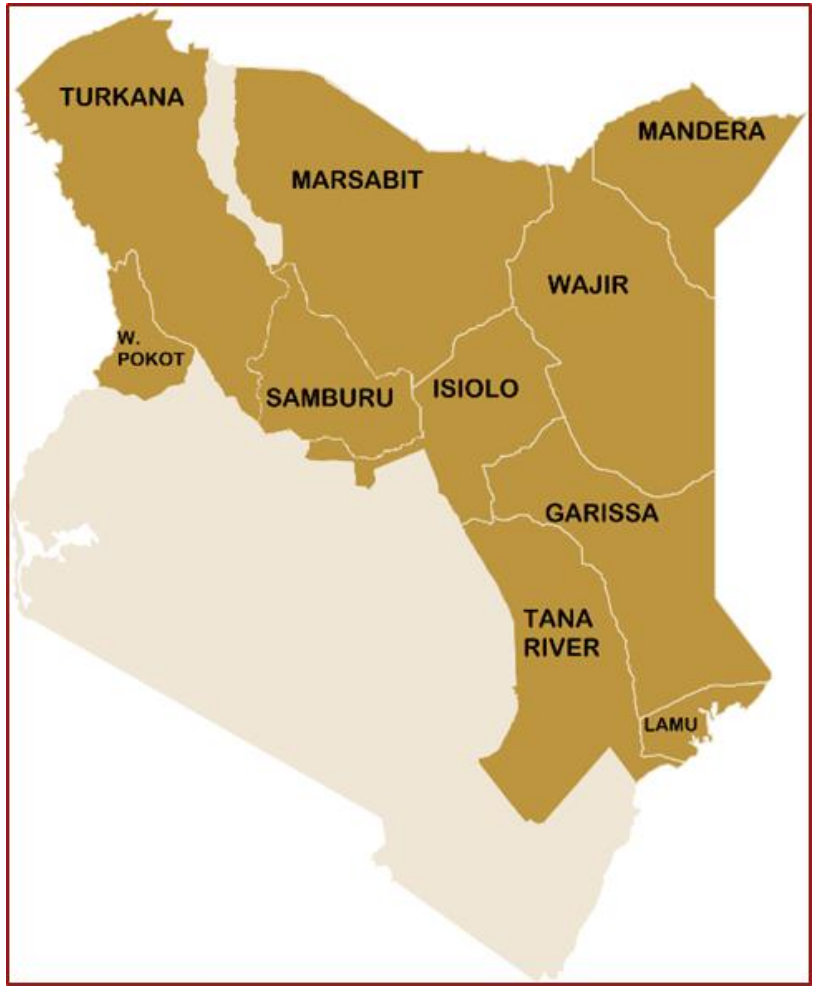
Camels in Kenya



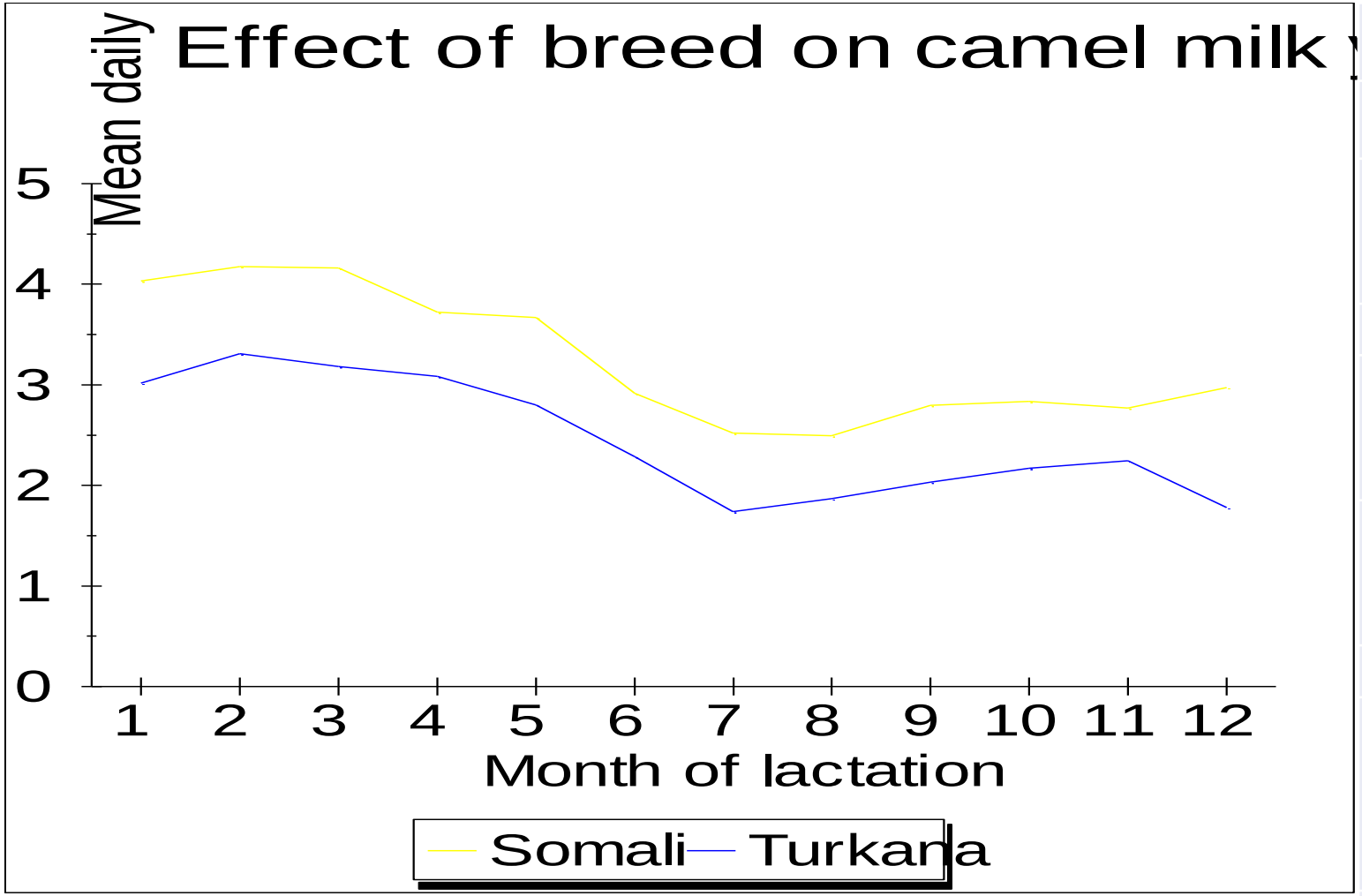


Management and Uses of Camels in Kenya

- Mostly traditional, extensive grazing — differing management systems
- Milk, Meat, Transport, Blood, Culturally significant. (dowry etc). Complementary grazing and species diversity
- Kenya – 2nd largest camel milk producer globally, but only 12% marketed (*Muloi et.al. 2018*).
- 170m litres camel milk goes to waste Annually (*Akweya et al, 2018*)

	Meat		
	Source: KNBS, (2016)		
	MT	US$/kg	US$
Cow	528,989	3.74	2.1 b;
Sheep and goat	78,368	4.12	323 m
Chicken	64,308	4.24	287 m
Camel	18,714	3.66	74.5 m
Pork	10,767	3.63	37 m

Effect of breed on mean daily milk yield (Kg/day) of Camels *(Source: Simpkin, 1996)*



	Somali	Turkana	Significance
Sample size	40	18	
Duration of lactation (weeks)	73± 2.1 (31-97)	65± 1.8 (54-81)	P<0.01
Complete Lactation			
Mean Total Yield per day (kg)	2.96± 0.1 (1.43-4.24)	2.25± 0.08 (1.69-2.92)	P<0.001
Mean total lactation yield (kg)	1506.0± 71 (349-2488.7)	1082± 60 (770.4-1628.8)	P<0.001
12 month lactation			
Mean Total Yield per day (kg)	3.27± 0.11 (1.44-5.15)	2.47± 0.09 (1.86-3.18)	P<0.001
Mean Total 12 month yield (kg)	1141± 46 (349-1878.1)	890± 31 (679.0-1161.1)	P<0.001

Effect of breed on camel milk composition, fat yield and solids-non-fat yield *(Source: Simpkin, 1996)*

	Somali	Turkana	Significance
Sample size	35	18	
Estimated mean daily yield† (kg)	2.3± 0.1 (0.8-4.3)	1.5± 0.1 (0.8-2.4)	P<0.001
Butterfat (g/100g)	4.03± 0.11 (2.33-5.17)	4.71± 0.22 (2.57-6.0)	P=0.012
Total solids (g/100g)	12.53± 0.19 (10.45-14.94)	13.51± 0.4 (10.87-17.11)	P<0.05
Water content (%)	87.48± 0.19 (85.06-89.55)	86.49± 0.4 (82.89-89.13)	P<0.05
Estimated total lactation fat yield ‡ (kg)	63.1± 3.35 (22 - 101)	51.1± 3.67 (20 - 80)	P<0.05
Estimated total lactation SNF yield ‡ (kg)	132.6± 0.6 (52.4 - 203.0)	96.4± 0.5 (66.8-144.8)	P<0.001

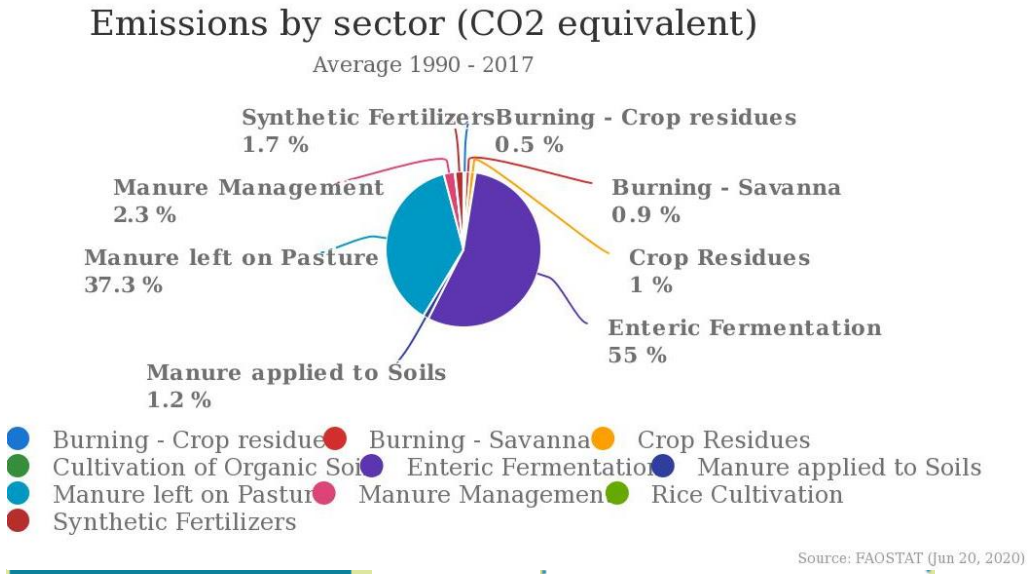
† = Yield estimated from offtake obtained during collection of samples for analysis.
‡ = Estimated using milk yields obtained from weekly milk records.

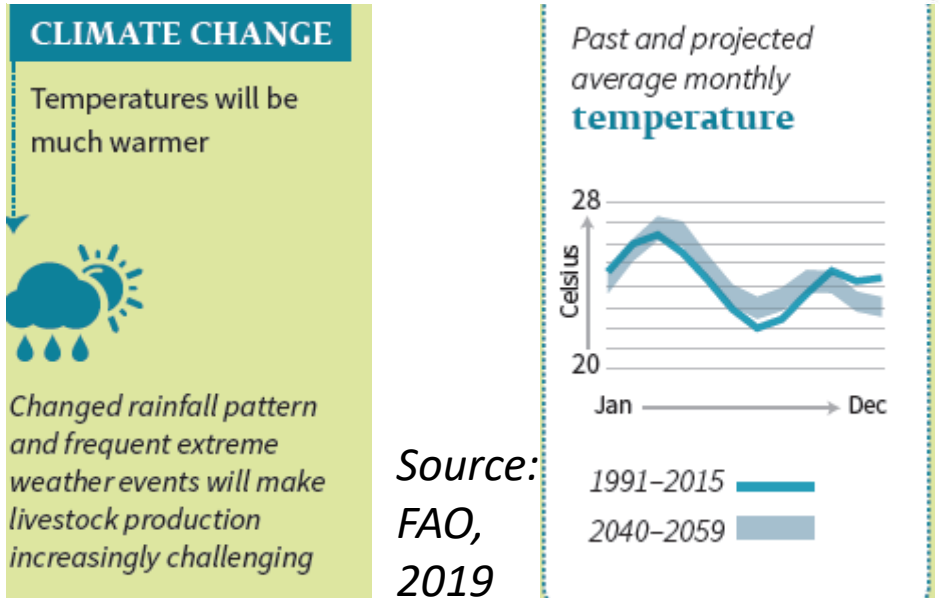
Species and Breed differences in birth and growth rates of livestock in Kenya (*Source: Various)*

* Under drier desert conditions

Breed	**Somali Camel *(Simpkin, 1996)***	**Turkana Camel *(Simpkin, 1996)***	**Rendille* *(Simpkin, 1984)***	**Small East African cattle *(Field, 1983)***	**Somali Sheep * *(Carles, 1986), Blackburn and Field, 1986)***	**Galla Goats* *(Blackburn and Field, 1986)***
Birthweight (kg) P < 0.05	30.8 ± 0.83 (34)a	26.7 ± 0.84 (17)b	29.0 ± 5.45 (38)	15±8 (21)	2.2± 0.15 (39)	2.3±0.13 (33)
Mean growth rate (kg/day) (0-12 months) P<0.001	0.500 ± 0.008 (36)a	0.438 ± 0.008 (18)b	0.298 ± 0.039 (20)	0.120 (to adult)	0.090 (to weaning); 0.066 to adult weight (300 days)	0.067 (to weaning); 0.052 to 300 days.

Climate change in Kenya and the future of livestock farming





Source: FAO, 2019

- 80% of Kenya arid and semi-arid ecosystem - currently low input/low output
- Reduction in rangeland area and productivity
- Intensification and market orientation
- Emission intensities and water use / kg

Climate change and camels

Positive	Negative
Adaptability	Slow maturation rate
Low water use	Long calving intervals
Low input – highly resilient animal	No selection – not a milk factory or Friesian
Low GHG emission c.f. other ruminants (Dittman et al. 2014)	
Low density grazing	
Camels not designed for intensive factory farming, but can quality of milk make the difference?	

Factors affecting the Future of the Camel in Kenya

POSITIVE	NEGATIVE (THREATS)
High cultural aswell and economic value of camels in some Kenyan communities.	Global trends, demands and beliefs: Growth in demand for white meat (poultry, fish and pork) Livestock with a low emission intensity Perceptions: Emerging diseases (MERS-CoV) Anti-livestock lobby
Resilience to drought and adaptability to CC	Adapted to desert environments and need for open grazing areas and mobility, threatened by expanding human populations and demands, settlement, land privatisation and sub-division.
Ability to access and produce high quality products off vegetation inedible to man.	Traditional management systems and negative selection
Environmentally friendly grazing habits maintains high biodiversity.	Less important for draft
Potential medicinal and nutritional advantages and increasing demand for camel products	

Research needs

- Further scientific research into the medicinal and nutritional value of camel milk and other products (and cost effectiveness *vis a vis* other treatments/therapies)
- Camel GHG measurements in extensive and intensive farming systems and comparisons to other species
- Comparative properties of camel products under extensive and intensive systems and processing methods
- Economic analysis of different camel and other livestock production systems
- Potential for camel nanobody technologies including snake-bite antivenom

Recommendations

- Improve breeding management and establish a PPP camel breeding centre
- Support for Scientific research studies (listed above)
- Move away from GHG emission intensity to include ecosystem services, biodiversity, natural life/animal welfare points


Thankyou
QUESTIONS??
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