

# From rural to urban: Exploring livestock farming practices in urbanizing landscapes in Kenya

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## Aim

To investigate how urbanization affects livestock farming systems across urban, peri-urban, and rural areas in Nakuru County, focusing on resource use and nutrient cycling for chicken, dairy cattle, dairy goat, and pig farms.

## Conclusion

Urbanization in Nakuru County drives a shift towards intensive, market-oriented livestock farming across all locations, resulting in:

- High stocking rates, especially in urban areas
- Increased specialized poultry farms in urban areas
- Reliance on external feeds, supported by agricultural supply stores

Possible implications:

- Land degradation at places where external feeds originate from
- Surplus of livestock manure due to high stocking rates

→ Improved nutrient management is essential to sustain livestock production and prevent nutrient cycle disruptions.

## Background

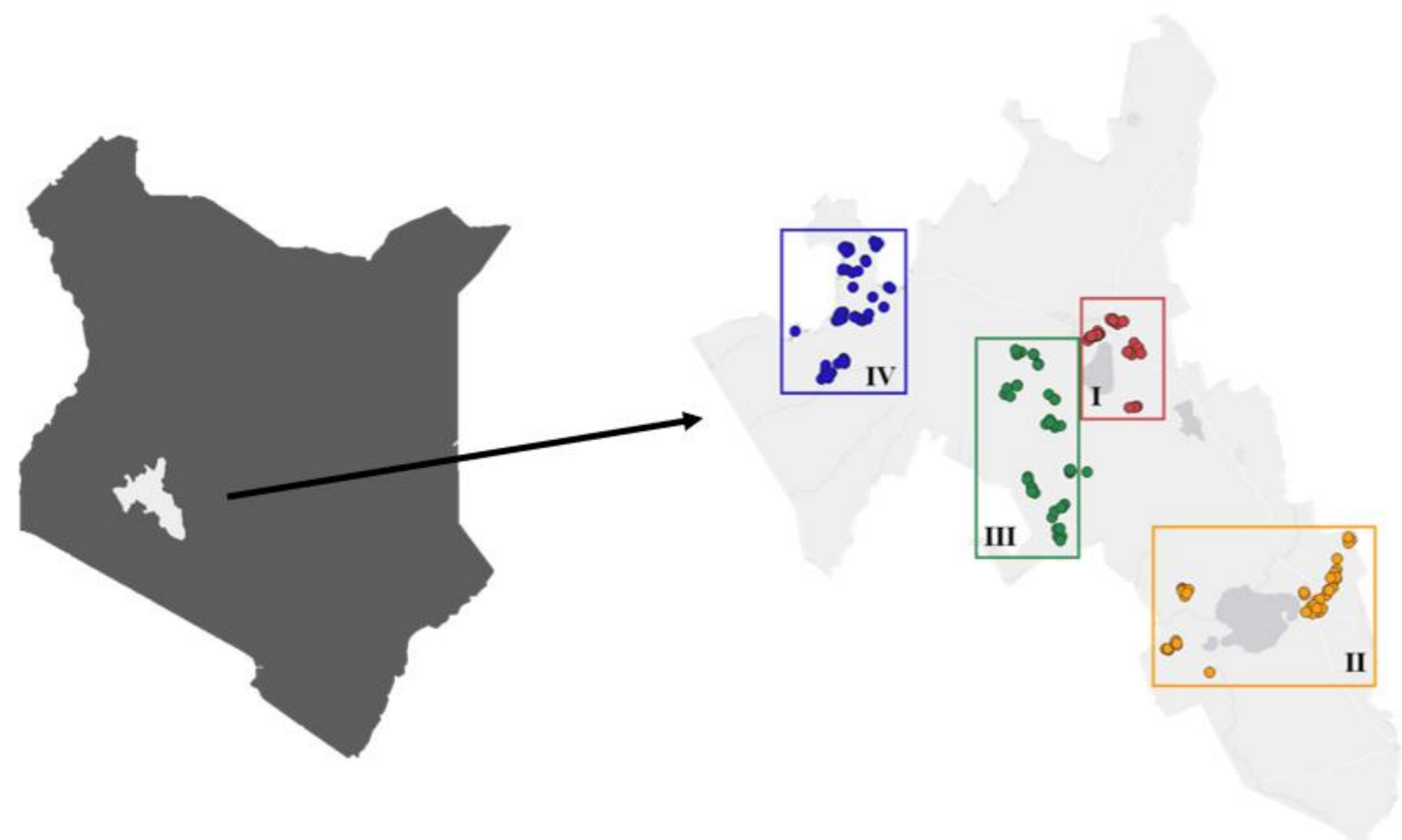
Urbanization in Kenya has surged, with the urban population growing from 10% in 1970 to 29% by 2020. As urban populations grow, economic status improves, and dietary preferences shift, the demand for animal source products increases. While most food production occurs in rural areas, urban and peri-urban agriculture also contributes to the supply of agricultural products in urban centers.

## Hypotheses

We hypothesize

- Small farm plots with high stocking rates in urban areas
- Specialized (monogastric) livestock farming in urban and peri-urban areas

- Diversity of livestock species in rural areas
- Reliance on external feed in urban areas
- Surplus of livestock manure in urban areas



## Methods

Field survey on 241 farms raising livestock in four sub-counties in Nakuru County, Kenya: Nakuru East (I; highly urban), Naivasha (II; medium urban), Njoro (III; peri-urban), Kuresoi North (IV; rural)

- Multi-stage cluster sampling: (1) three wards per Sub-County; (2) four streets/areas per ward; (3) stratified sampling
- Seven trained local enumerators
- Structured questionnaire with qualitative and quantitative questions

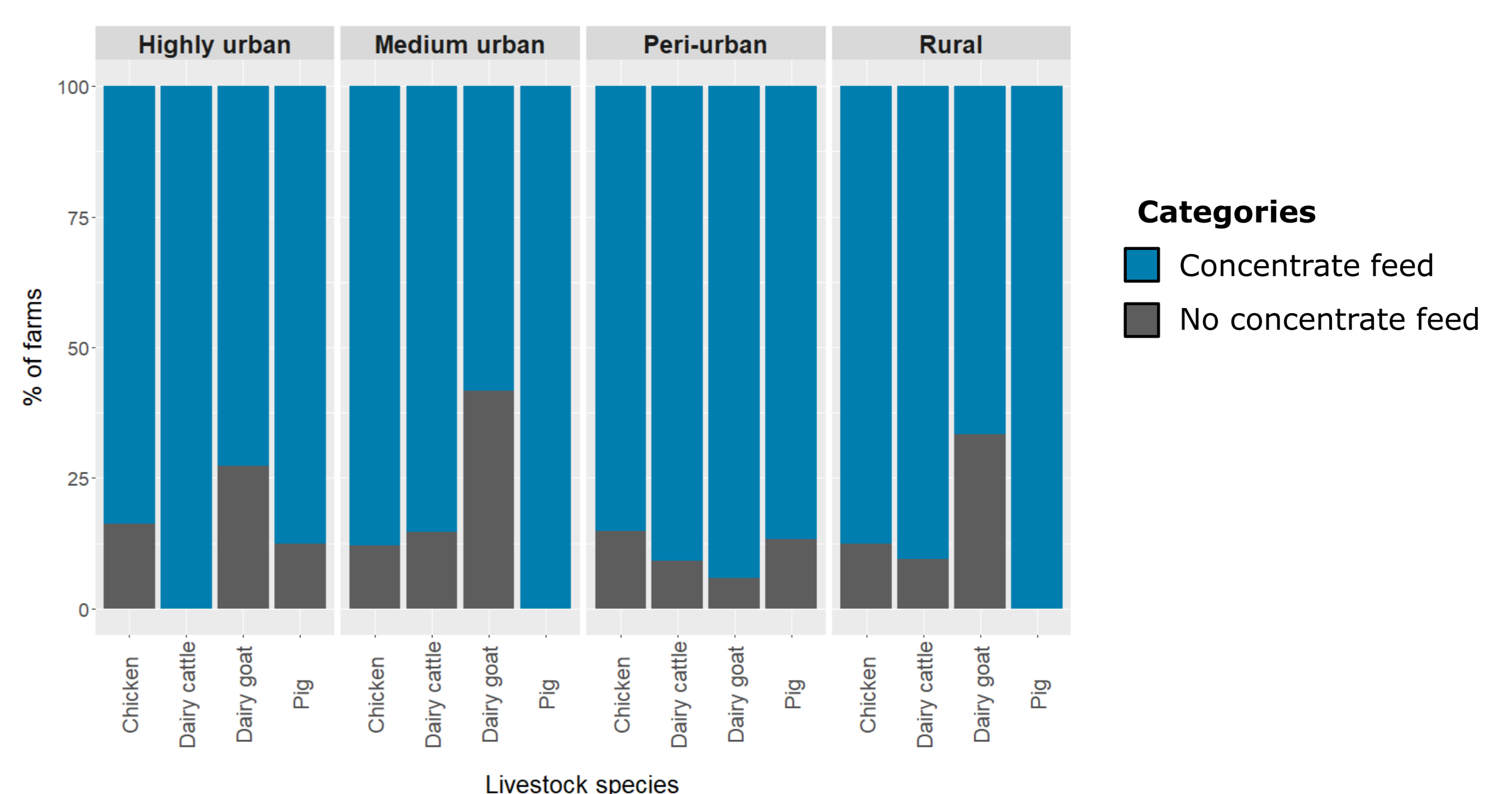
## Results

**Table 1.** Farm size based on land size and tropical livestock units (TLU) in urban, peri-urban, and rural locations in Nakuru County (mean ± SD)

Item	Highly urban Nakuru East (n = 56)	Medium urban Naivasha (n = 61)	Peri-urban Njoro (n = 55)	Rural Kuresoi North (n = 69)
Farm size (ha)	0.4 ± 0.61 <sup>a</sup>	3.4 ± 10.37 <sup>c</sup>	1.8 ± 1.72 SD <sup>bc</sup>	2.5 ± 4.29 <sup>b</sup>
Cropland (ha)	0.1 ± 0.18 <sup>a</sup>	2.2 ± 9.25 <sup>c</sup>	1.0 ± 0.96 SD <sup>b</sup>	1.5 ± 3.63 <sup>b</sup>
Fodder land (ha)	0.1 ± 0.35 <sup>a</sup>	0.4 ± 0.84 <sup>a</sup>	0.4 ± 0.68 SD <sup>b</sup>	0.3 ± 0.54 <sup>b</sup>
Grassland (ha)	0.1 ± 0.28 <sup>a</sup>	0.2 ± 0.59 <sup>a</sup>	0.2 ± 0.57 SD <sup>a</sup>	0.4 ± 0.67 <sup>b</sup>
No. of landless farms	18	5	0	0
Herd size (TLU)	5.0 ± 5.06 <sup>a</sup>	9.2 ± 8.30 <sup>b</sup>	8.4 ± 7.73 <sup>b</sup>	8.7 ± 6.58 <sup>b</sup>
Stocking rate (TLU/ha)	66.4 ± 190.92 <sup>a</sup>	19.3 ± 30.55 <sup>a</sup>	9.6 ± 20.26 <sup>b</sup>	6.3 ± 5.57 <sup>b</sup>
Livestock diversity (# of species/farm)	2.3 ± 1.35 <sup>a</sup>	2.8 ± 1.38 <sup>ac</sup>	3.7 ± 1.30 <sup>b</sup>	3.1 ± 1.00 <sup>bc</sup>

a,b,c Within a row, means with different superscripts differ (P < 0.05)

### Concentrate use per livestock species at different locations



### Manure use at different locations

