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Livestock feeding systems and feed gaps across three agro-ecologies in Tanzania

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Livestock feeding in Tanzania

- In Tanzania, 22 million cattle (2% crossbred dairy, others Tanzania Short Horn Zebu) kept by ~ 4.6 million smallholder farmers
- Inadequate quality and quantity of feed cause low livestock productivity, but lack of quantitative data to illustrate this gap
- This study aimed to i) explore feed baskets of smallholder dairy production systems in Tanzania; ii) quantify diets in terms of dry matter (DM) intake, energy and protein; iii) assess labor burden of livestock keeping and feeding.

Figure 1. Bihusi (left) and her husband Twahilu (right) from Mbuzii, Lushoto. They feed their three cattle with naturally occurring grasses as well as Napier and *Brachiaria* grasses and *Desmodium*. Pictures Georgina Smith/CIAT

Materials and methods

- Study sites are Lushoto (Tanga region), Mvomero (Morogoro) and Babati (Manyara), representing contrasting agro-ecologies (Fig 2)
- Household surveys, feed and milk measurements, observations were conducted during the rainy season (April – June) 2016 on 28 farms of different farm types. Lushoto was sampled a second time during the dry season (August) 2016
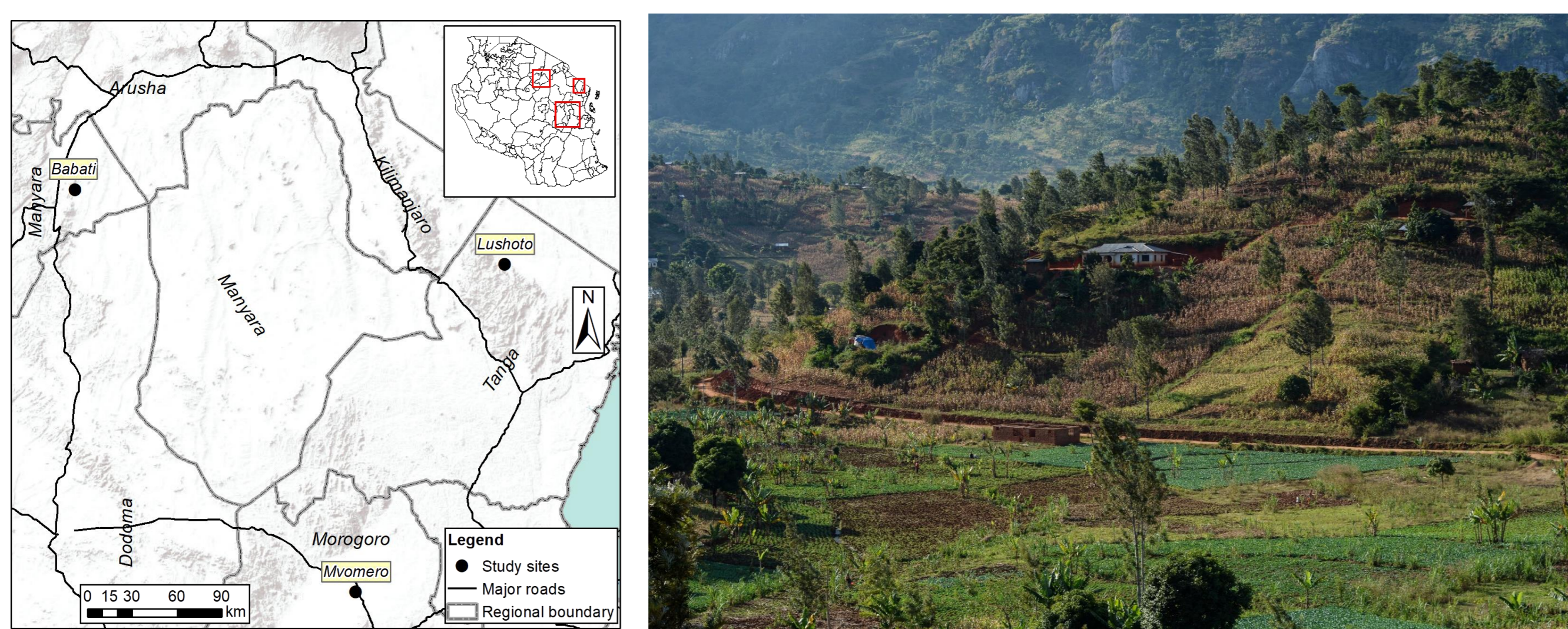- Feed quantities were converted to DM, protein and energy by relying on measured and reported nutritive values

Figure 2. Map of the study sites across Tanzania (left); typical landscape in Lushoto is planted with Napier grass on terraces and contours to combat soil erosion and increase livestock fodder production (right; picture Georgina Smith, CIAT).

Preliminary results and discussion
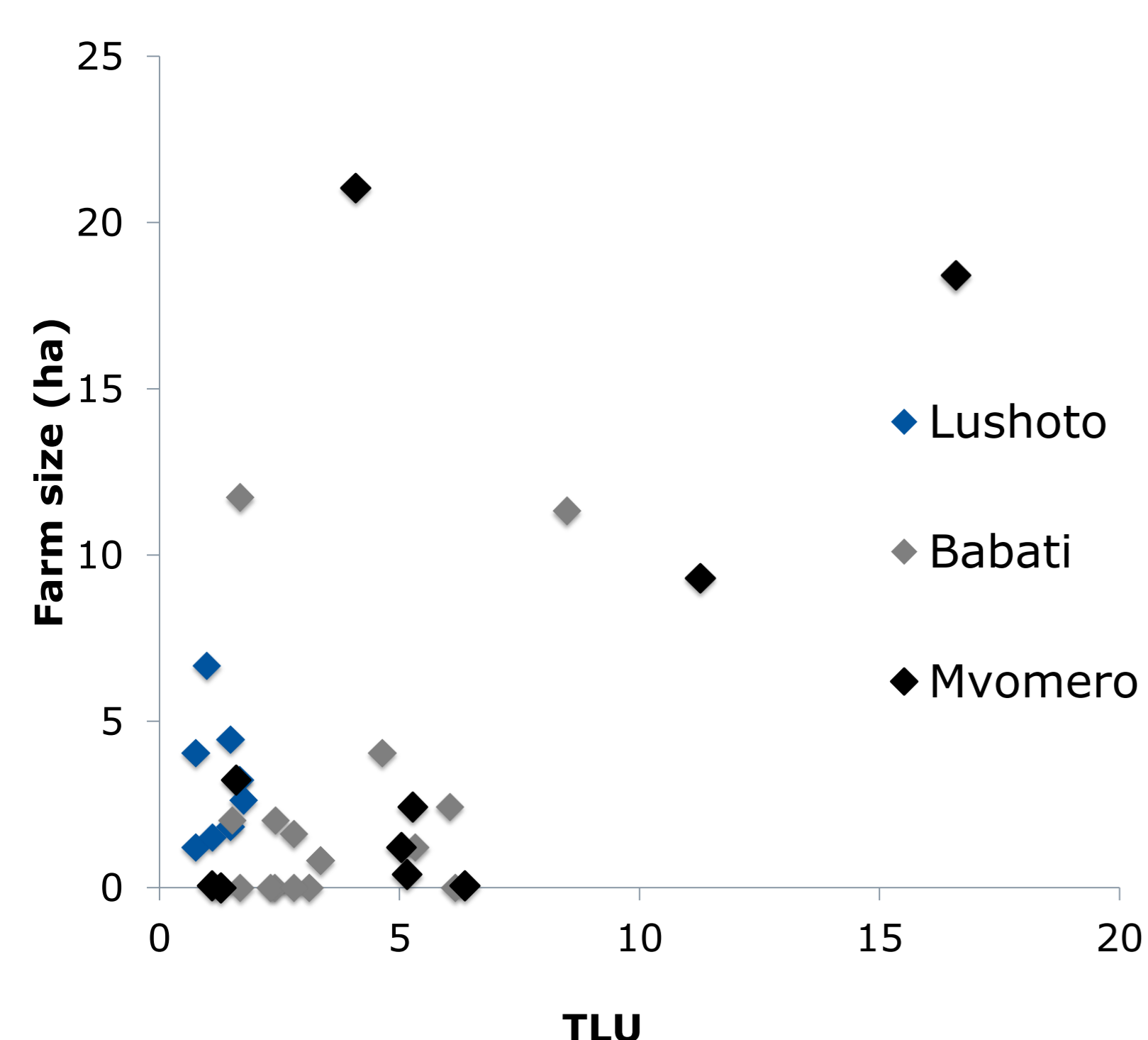
- Largest farm sizes found in Mvomero (average 9.7 TLU) and Babati (7.9); Lushoto (1.3) smaller
- Lushoto only zero-grazing systems, Mvomero mostly grazing, Babati mixed
- Farm size and livestock herd correlated, but exceptions: for example large herds in Babati and Mvomero with small farms -> communal grazing
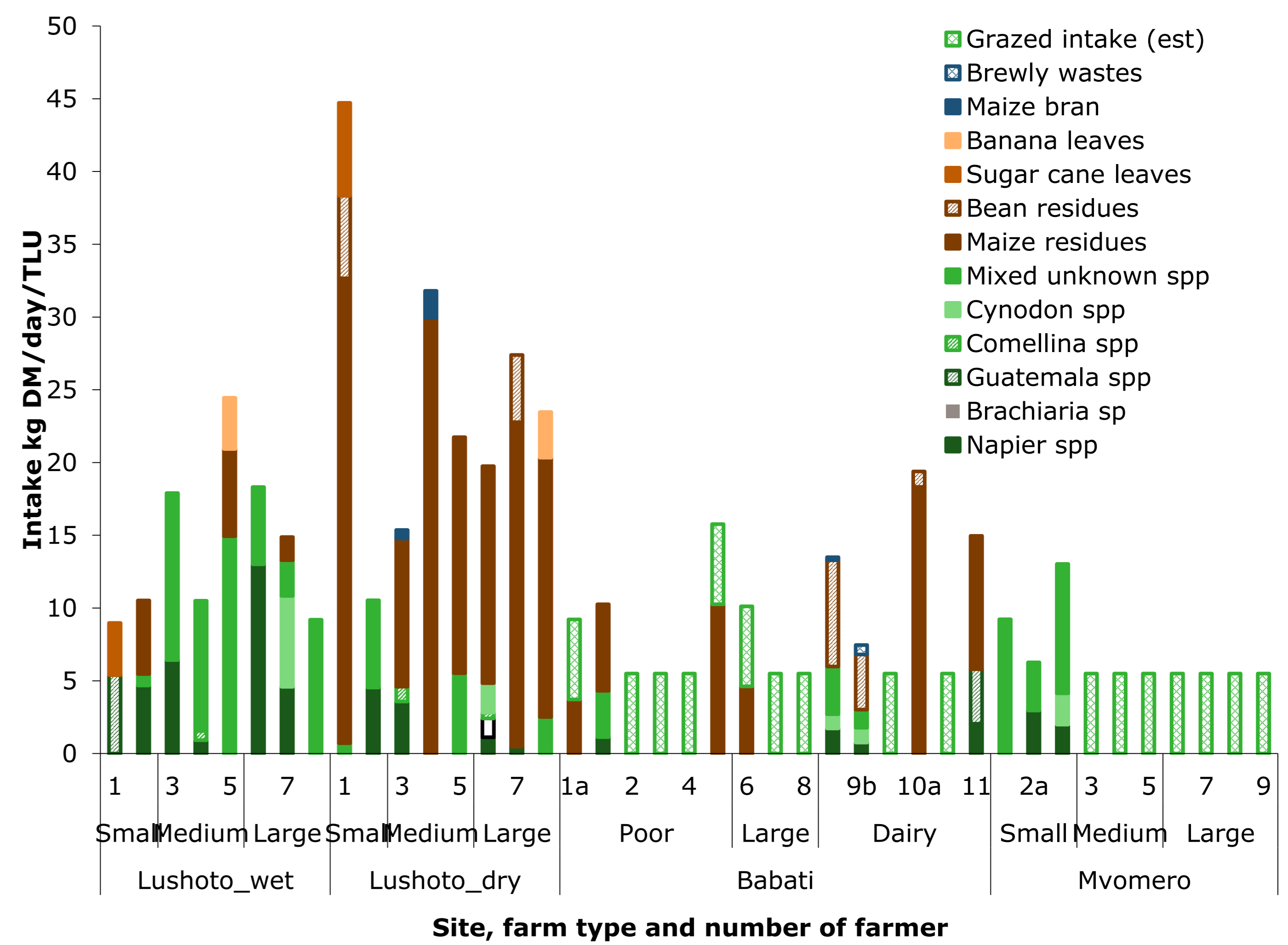

Figure 3. DM intake per day and TLU across sites and farm types. Green fodders are denoted in greenish colours (natural and planted), crop residues in brownish colours, and commercial feeds in blueish colours

- Diversity of feed baskets was high
- Bulk of feed in all sites came green fodders, either grazed or cut/carry
- Maize and to a lesser extent bean and banana residues were also prominent – residue feeding much higher in dry season
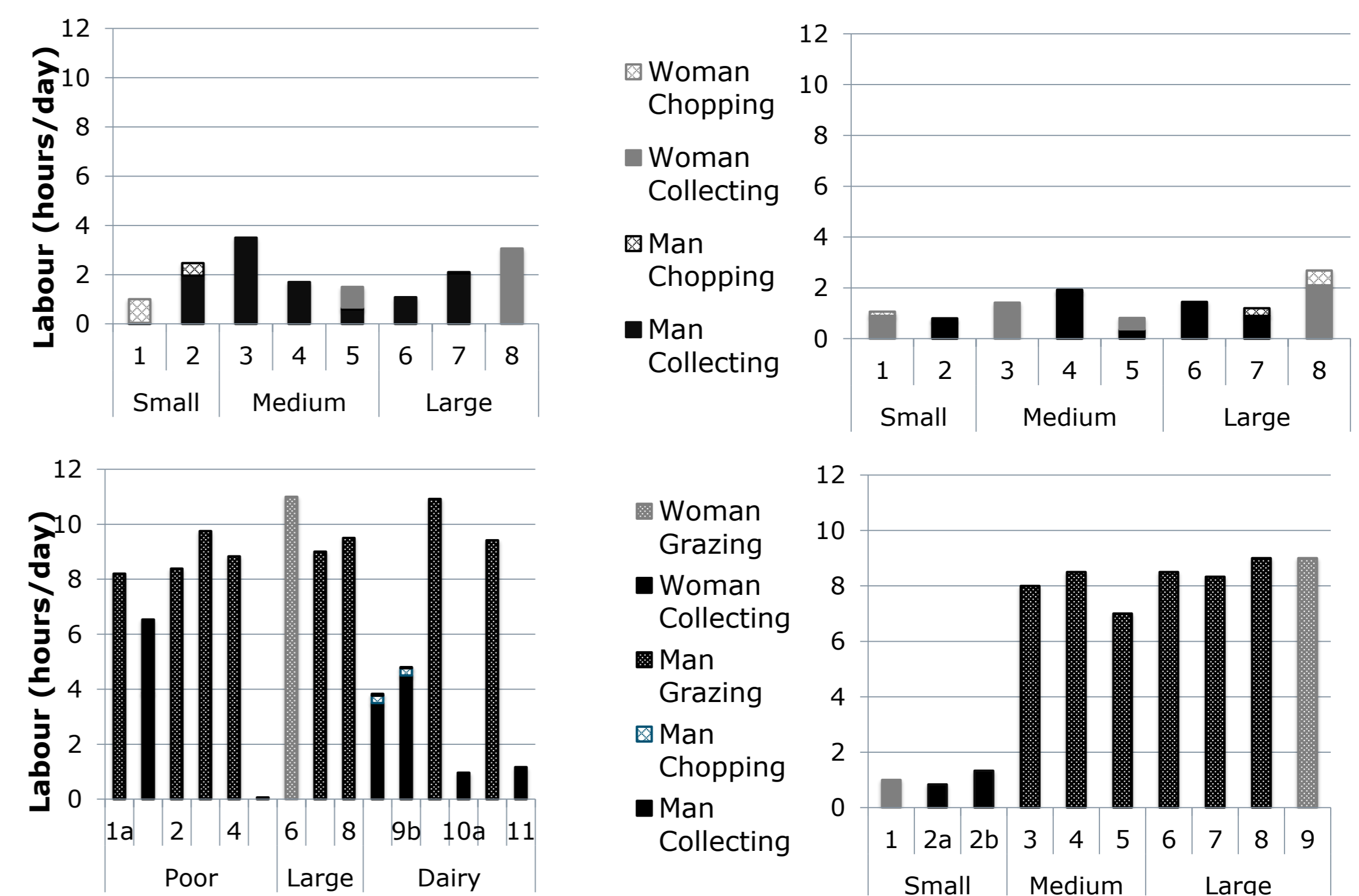- Purchased feeds were not common

Figure 4. Livestock related labour per gender and activity. Lushoto wet season (upper left), Lushoto dry season (upper right), Babati (lower left), Babati (lower right)

- Babati and Mvomero households spent more time on livestock (mainly grazing conducted by men), but herds were larger
- In Lushoto, most livestock labour was required for fetching feed (20-50% of daily labour of one family member), mostly conducted by men
- Fodder chopping not common
- Next steps:
  - Compare with livestock requirements in terms of crude protein and metabolizable energy to identify feed gaps
  - Explore potential for improved forages to close gap and reach higher milk yields

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