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Introduction

In West Africa and in Asia, cities are growing at a fast pace, putting pressure on agroecosystems to close the production gap.

The emerging megacity of Bengaluru, India, combines rapid urbanisation with a great demand for dairy products.

High-yielding exotic cattle breeds are a common sight all over Bengaluru but it is unknown how efficiently they produce in this urbanizing tropical context (Fig. 1).

Aim of the study

To quantify **milk offtake** (MO) and **feed efficiency** in dairy cattle of different genotypes, in dairy units across the urbanizing Rural-Urban Interface (RUI) of Bengaluru

Methodology

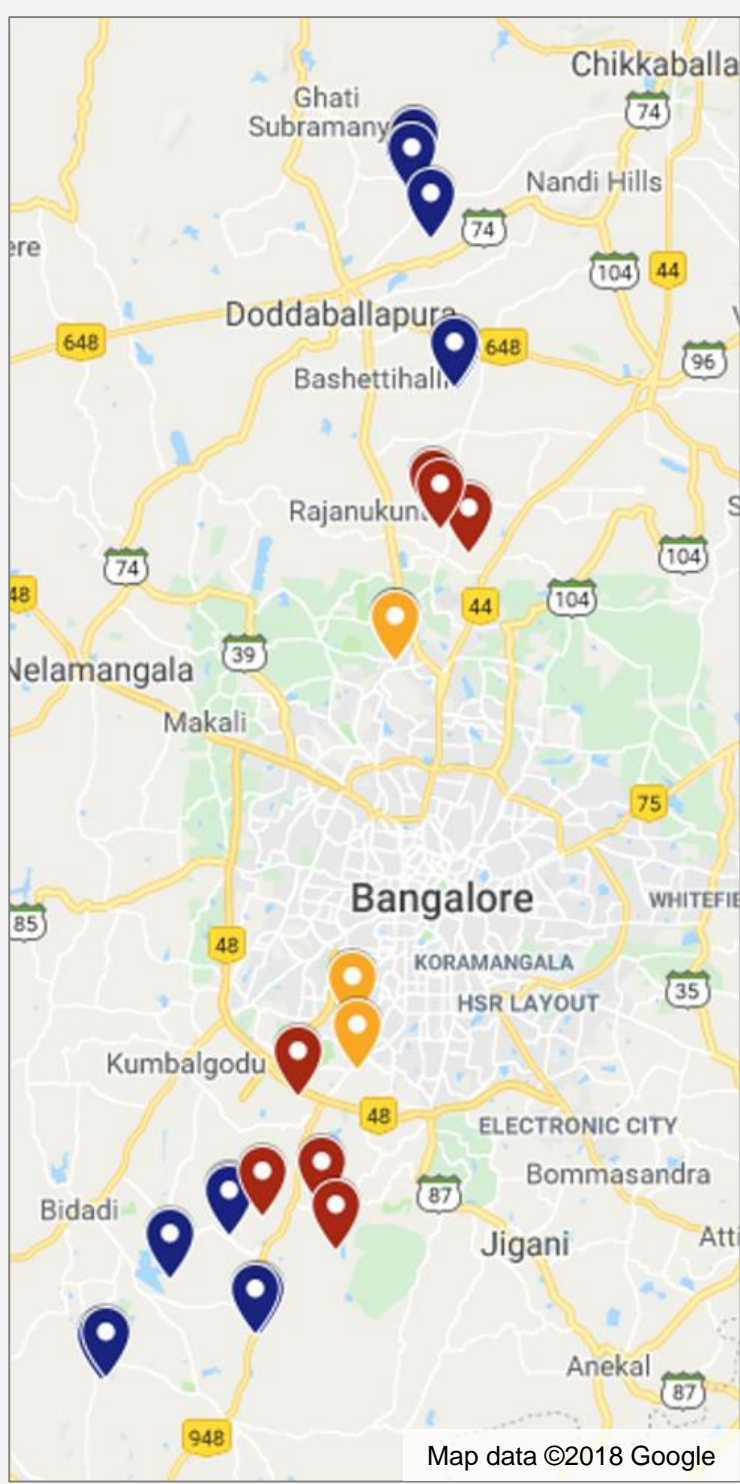


Fig. 3 Location of the 28 monitored dairy units in and around Bengaluru (Urban, peri-urban, rural settlements)

Selection of seven dairy units per production system for nutrition monitoring (Fig. 2 & 3).

Eight visits per dairy unit over one year to quantify feed intake and daily milk offtake for individual dairy cows, plus qualitative sampling of feedstuffs and milk (Fig. 4).



Fig. 1 How efficient are dairy cows of different genotypes under tropical environments and how does urbanization affect the availability of resources for the farmer?

Highlights

Interaction between genotypes and urbanization strata highlights **untapped production potential & disparity in resource availability.**

Only one cow out of four has an adequate supply of energy.

Reducing under- and oversupply will increase resource use efficiency.



Fig. 4 An urban cow's diet (left) and milking of an Jersey cow (right)



Fig. 5 An Holstein Friesian (left) and a multi-generation crossbreed (right)

Results

Feeding practices

Various feeding strategies with or without reliance on self-cultivated forages and pasture.

Common feedstuffs: Napier grass, maize, finger millet straw, natural grasses, crop residues, concentrates; in urban areas market waste (fruits, vegetables).

Genotype and milk offtake (Fig. 5 & 6)

Exotic breeds:

Holstein Friesian (HF), Jersey (J)

MO = 10.6 l/day

Most productive in **urban** areas

(Multi-generation) Crossbreeds:

F1 = HF x J with MO = 10.2 l/day

F2+ = HF or J x local cattle or crossbreed with MO = 8.5 l/day

Most productive in **peri-urban** areas

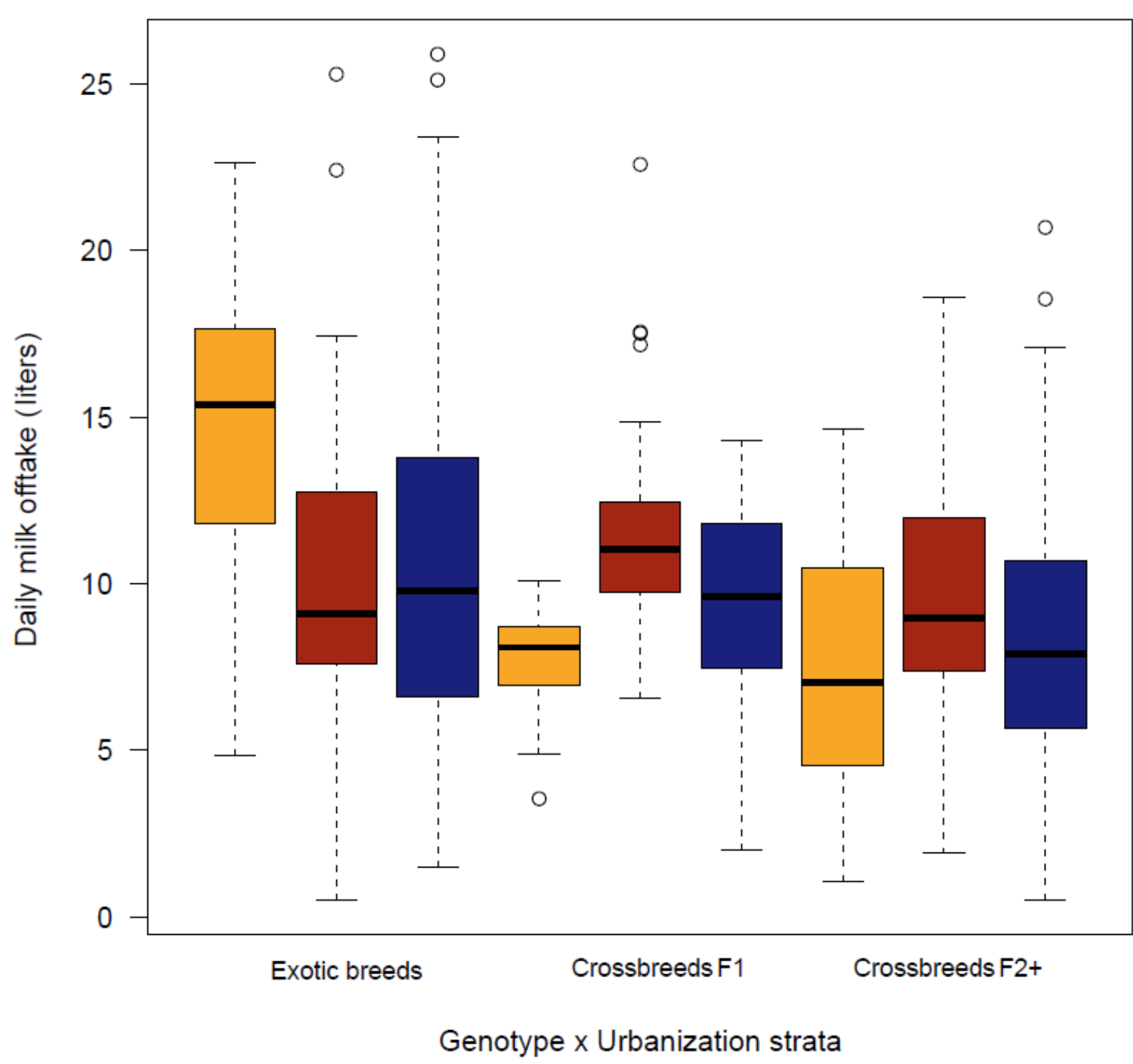


Fig. 6 Individual daily milk offtake per genotype and urbanization strata (Urban, peri-urban, rural; significant interaction $p < 0.05$)

Feeding efficiency

Dairy producers mostly under- or oversupply their cattle in energy, without distinction between genotypes (Fig. 7).

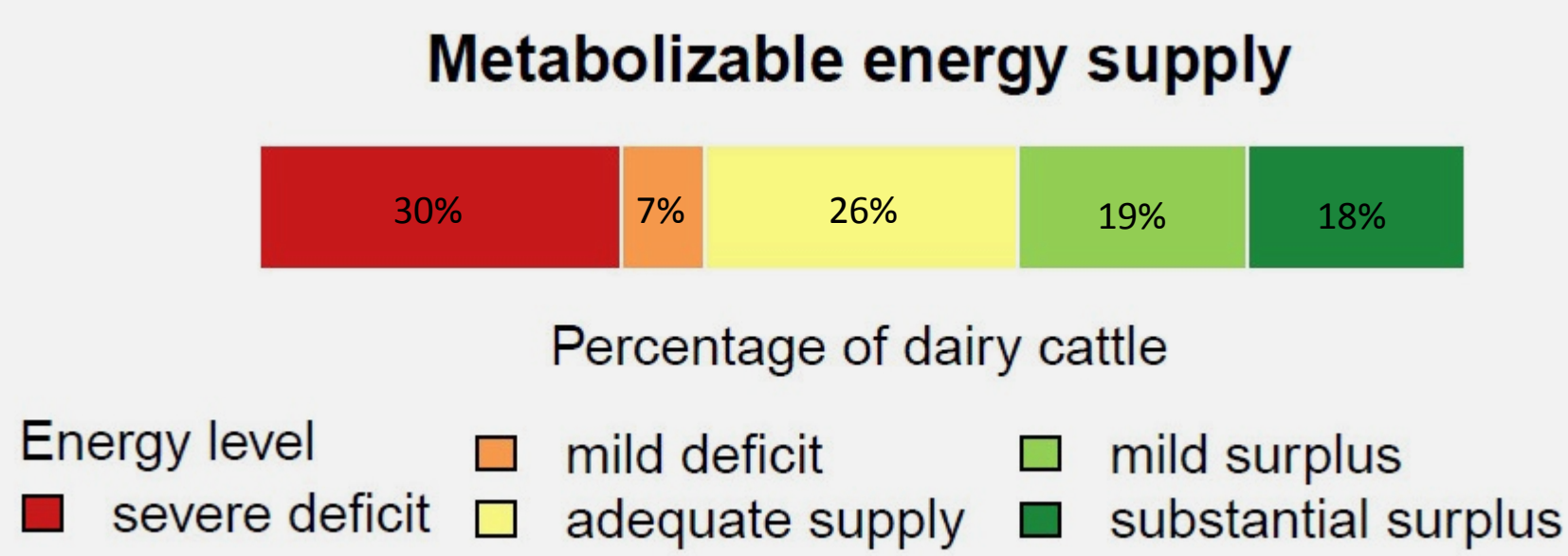


Fig. 7 Percentage of dairy cattle per energy supply level calculated as the ratio between individual intake and requirement of metabolizable energy as proxy for feeding efficiency.

