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“Filling gaps and removing traps
for sustainable resource management”

Urbanising Tropical Environments and the Production Gap – The Case of Dairy Production in Bengaluru, India

MARION REICHENBACH¹, ANA PINTO², SVEN KÖNIG², RAGHAVENDRA BHATTA³, EVA SCHLECHT¹

¹*University of Kassel / Georg-August-Universität Göttingen, Animal Husbandry in the Tropics and Subtropics, Germany*

²*Justus-Liebig-University Giessen, Inst. of Animal Breeding and Genetics, Germany*

³*National Institute of Animal Nutrition and Physiology, Inst. of Animal Breeding and Genetics, India*

Abstract

While drivers of change such as urbanisation and population growth have a huge impact on agriculture in (sub-)tropical regions, this is also where gaps in terms of resources use efficiency are the largest. In the emerging megacity of Bengaluru in India, rapid urbanisation is combined with a high demand for dairy products. Yet, neither has the resources use efficiency of the dairy units providing these products been quantified, nor have transition processes that are provoked by urbanisation been considered. Therefore, the aim of this study was to quantify on-farm resources use with a focus on feed efficiency of dairy cattle, in relation to surrounding urbanisation. Twenty-eight dairy units were selected across the rural-urban interface of Bengaluru: 4 urban, 8 peri-urban and 16 rural ones. During one year, each dairy unit was visited at a 6 weeks interval to collect data on herd management, and at animal level growth, offered forages and milk offtake. Temperature and humidity were recorded at the dairy units. Most commonly offered forages were self-cultivated maize and elephant grass, and during the dry season, finger millet straw. Dairy producers also offered grass collected on field margins or public land, and in urban areas, market waste. Cows were sent to pasture by 77% of producers. In densely build-up areas, cows were pasturing in the streets (organic waste) or public green space. Across dairy units and seasons, the daily amount of green forage offered ranged from 0 to 44.4 kg cow⁻¹. In addition, each cow received between 0 and 4.3 kg of concentrate twice a day. Daily milk offtake in the early lactation varied from 5.8 to 18.1 kg cow⁻¹. The data show the high variability in farm resources, feeding strategies and subsequent production (in-)efficiency. On one hand, urban dairy units scored a higher milk production and compensated for the lack of private land by relying on publicly available resources to provide the highly demanded milk directly to consumers. On the other hand, manure management in the city was poor, suggesting that peri-urban dairy units hold the highest potential for efficient resources use as they combine opportunities of rural and urban localities.

Keywords: Dairy production, resources use efficiency, urbanisation, megacity