

Emission intensity of livestock production in the periphery of Ouagadougou, Burkina Faso

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Introduction

Livestock production systems in the Global South are often low-yielding.

They are perceived as disproportionately high greenhouse gas emitters.

Thus, intensification of production is seen as major pathway to decrease emission intensity.

In Ouagadougou, capital of Burkina Faso, intensification is driven by increasing urban demand for animal products (Fig. 1).

Aim of the study

To assess the relationship between **emission intensity of milk** and the **production strategies** chosen by urban and peri-urban dairy producers in Ouagadougou.



Fig. 1 A dairy producer milking his cow.



Fig. 3 Livestock kept in a corral in Ouagadougou.

Highlights

The yearly emission intensity of milk produced by local Zebras was twice as high as the one of Sahelian Zebras or Exotic crossbreds.

Reasons were the lower digestibility of their diet and lower yearly milk production.

This study contributes to the documentation of the global environmental impact of low-yielding yet intensifying livestock production systems in the Global South.

It highlights the relative importance of intensification strategies focused on **breeding** or **feeding** used by livestock producers for the emission intensity of urban and peri-urban milk production.

Results

Feeding practices

Dairy cattle grazed between 6 to 9 hours per day. Grazing contributed to 70% of the daily feed intake of local Zebu but to maximum 45% of the daily feed intake of Sahelian Zebu and Exotic crossbreds.

Farmers used a wide range of feedstuffs (Fig. 4 and 5).

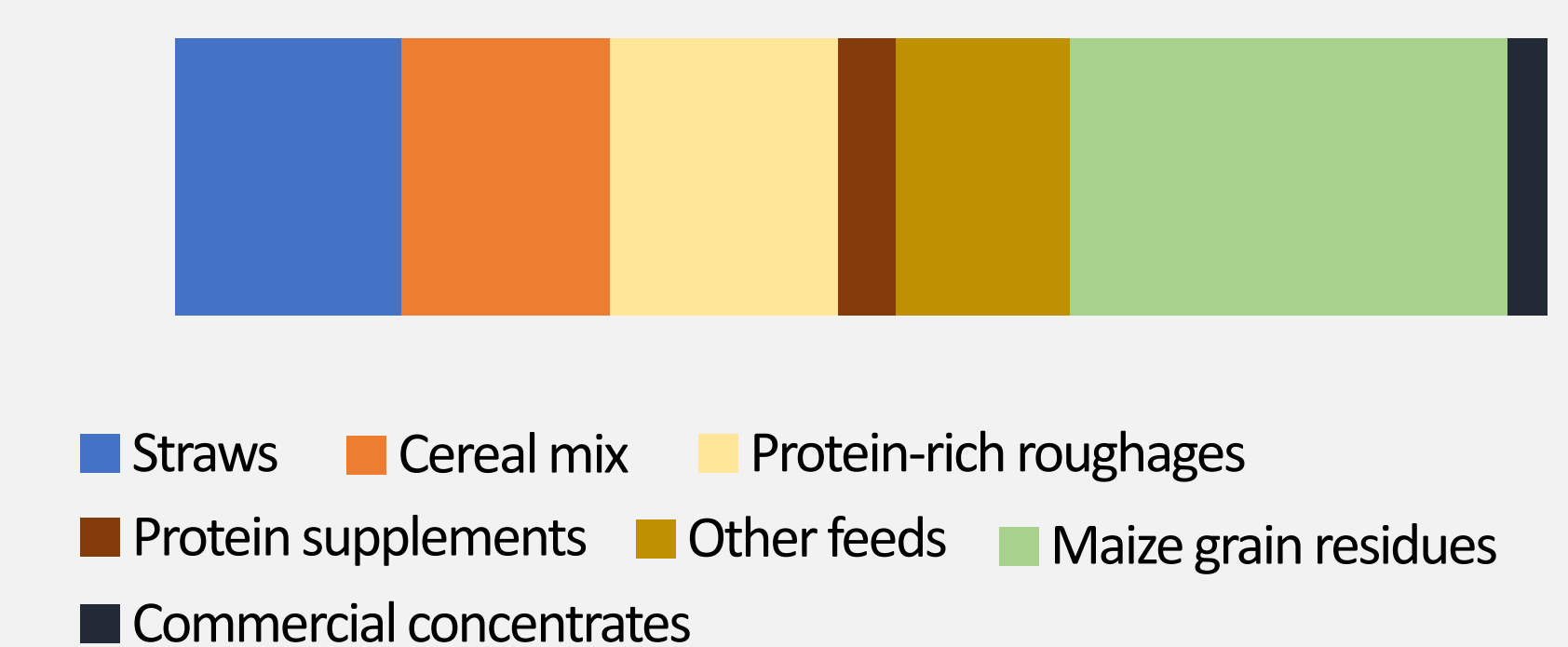


Fig. 4 Contribution of major types of feedstuffs fed on farm to the annual dry matter intake of dairy cows (Adapted from Schelcht et al., 2019 DOI 10.1007/10705-019-09996-x).

Milk production and emission intensity

- Local Zebu (LZ): 1.70 kg/day
- Sahelian Zebu (SZ): 8.20 kg/day
- Exotic crossbred (EC): 9.01 kg/day

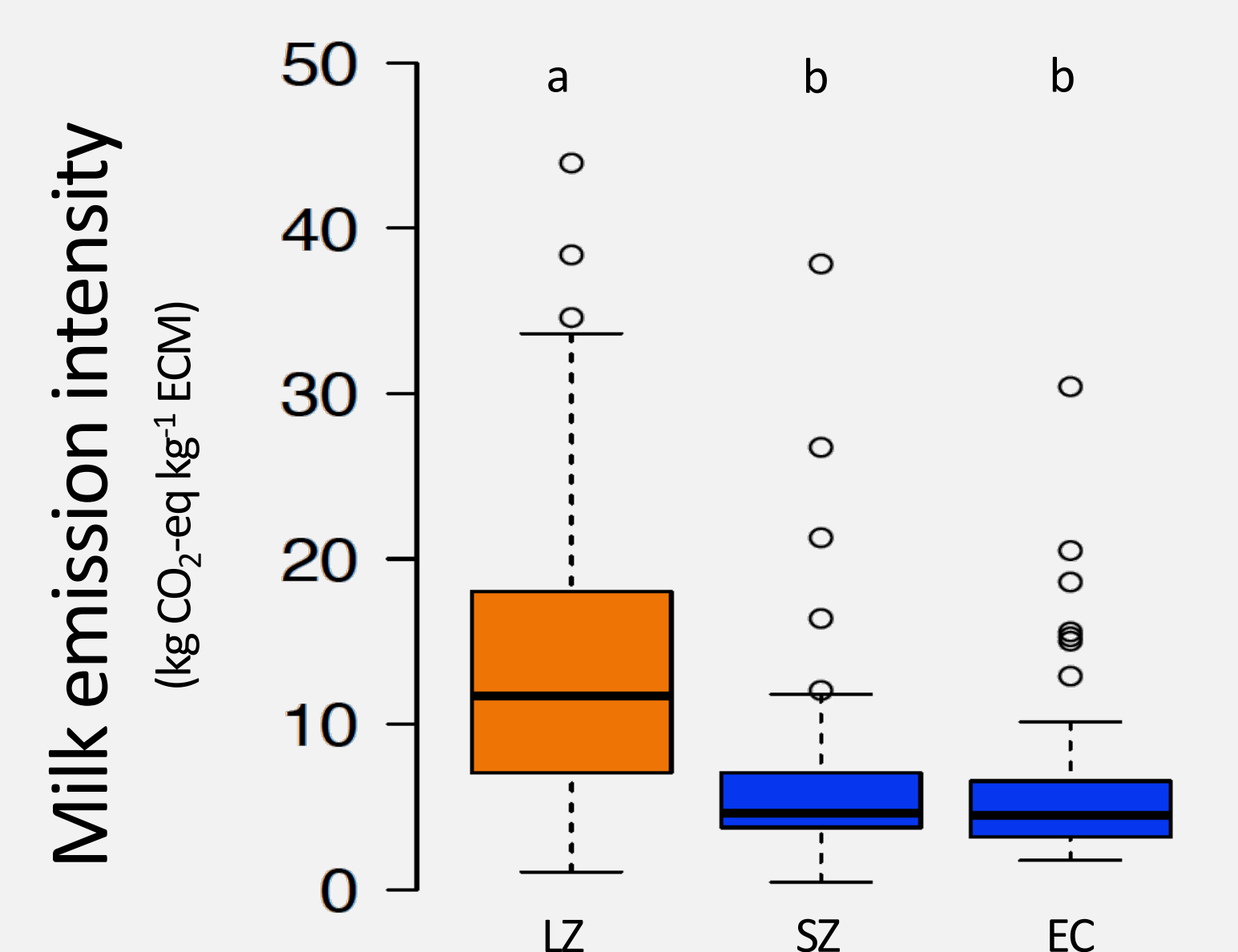


Fig. 6 Emission intensity, expressed as carbon dioxide equivalents (CO₂-eq) per kg of energy-corrected milk (ECM) produced over a year and per genotype of dairy cows kept on peri-urban and urban farms of Ouagadougou.

Methodology



Fig. 2 Map of Burkina Faso, in West Africa, with Ouagadougou, its capital and biggest city (2.7 millions inhabitants in 2016), highlighted (<https://gisgeography.com/burkina-faso-map/>)

- From 181 farms surveyed in **urban and peri-urban areas of Ouagadougou**, Burkina Faso (Fig. 2), selection of 18 dairy producers.
- Monitoring of feeding practices, weight gain and milk production of dairy cows over 16 months (10 visits between 10/2014 and 01/2016).
- Calculation of **milk emission intensity** according to IPCC 2006 guidelines (CH₄ due to enteric fermentation, and CH₄ and N₂O due to manure management system).



Fig. 5 A crossbred cow in Ouagadougou.

