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### Introduction

- The multidisciplinary research project UrbanFood<sup>Plus</sup> aims at developing site-specific, farmer-tailored innovations for improved agricultural production, food safety, and value chains in four major West African cities.
  - As an integral part, long-term field data were collected in animal husbandry systems.
- Feeding practices and animal performances were monitored on farm to identify options to improve current cattle and pig husbandry practices in Ouagadougou.



Fig. 1: Cattle (a) and pig (b) weighing, roughage for cattle (c) and feed ration for pigs (d), homestead feeding (e, f).

### Methods

- After a baseline study of 181 farms conducted in 2014, 21 farms were selected that represent the livestock farm diversity across Ouagadougou.
- On farm monitoring took place every 6-10 weeks over a period of 16 months.
- Measurements included animal weighing, quantification of feed offered to groups and individuals (Fig. 1), feed sampling and qualitative analysis.
- Metabolizable energy (ME) offered was compared to the animals' requirements using estimation formulas and literature values.

### Results

Tab. 1: Average weight gains (g/day) of beef and dairy cattle as well as pigs during early dry season (EDS), late dry season (LDS) and rainy season (RS).

Animal Type	Breed	n	EDS	LDS	RS	SEM
Beef Cattle	Local Zebu	593	189	75	374	13.3
	Sahelian Zebu	62	387	603	599	46.7
Dairy Cattle	Exotic Crossbred	390	287	83	70	17.5
	Local Zebu	1477	59	-78	204	6.3
	Sahelian Zebu	669	190	111	234	12
Pigs	Crossbred Pig	667	103	109	78	4.4
	Local Pig	730	81	54	52	3.2

Colors highlight particularly high (green) and low (red) values.  
SEM: Standard error of the mean.

- Depending on animal and breed type, seasonal patterns of weight change were apparent (Tab. 1), along with carry over effects to the subsequent season.
- For pigs, average weight gain was lowest during rainy season when most piglets were born (Tab. 1).
- Adequately fed crossbred pigs and local zebu cattle showed the highest growth potential (data not shown).

### Conclusions

- Growth potential of the animals by far not exhausted
- High variability in feed offered across farms, animal types and seasons.
- Optimization potential regarding the adjustment of feed offer to the requirements of individuals or homogenous groups.

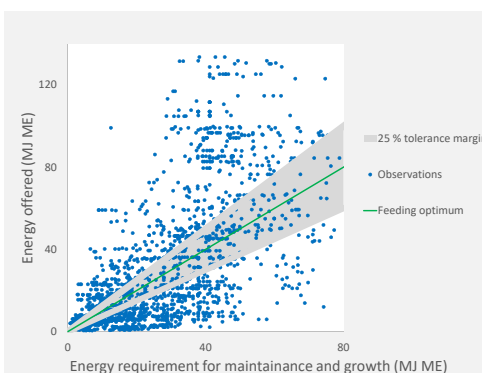


Fig. 3: Metabolizable energy (ME) offered and respective requirements for maintenance and growth of individual pigs and cattle. The 25% tolerance margin accounts for inaccuracies in estimation formulas.  
MW: metabolic weight = live weight exp. 0.75

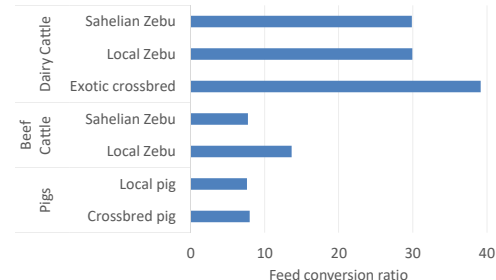


Fig. 2: Conversion ratio of home-based feeding (kg feed/kg weight change) of different animal types and breeds. Especially cattle are also grazing in addition.

- In all pigs and crossbred beef cattle, feed conversion varied from 1 to 8, while values of 13 were reached in local beef zebus. In dairy cattle, feed conversion ratio was very poor (Fig. 2).
- Across systems, feed offered at the farm supplied about 1.2 times the required amount of ME, even when animals had access to pasture (Fig. 3).
- In 37% of the observed cases (Fig. 3), the animal's energy requirement was not met.
- Only in 23% of the observed cases, the animal was adequately fed as far as energy supply was concerned (Fig. 3).

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