



Benchmarks for the indicator liter of water per kilogram of milk by production system and type of consumption in the Brazilian dairy farms



Water use assessment
of livestock production
systems and supply chains

International Workshop

Dec 14-16, 2022

@LeibnizATB, Potsdam

Sponsored by OECD Co-operative Research Programme:
Sustainable Agricultural and Food Systems

Julio Cesar P. Palhares

Embrapa

Southeast Livestock

INTRODUCTION



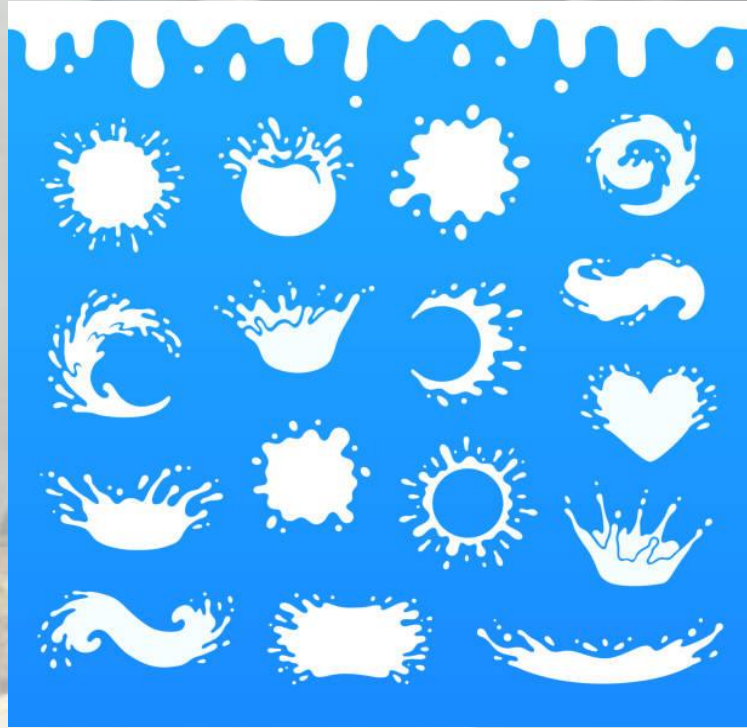
The indicator liter of water per kilogram of milk is fundamental for promoting the management of water resources in dairy farming.

This indicator should be generated for each production system and type of consumption.

In this way, decision-making will be more assertive.



OBJECTIVE



The aim of this study was to establish benchmarks for the indicator liter of water per kilogram of milk by production system and type of consumption in the dairy farms.

MATERIAL AND METHODS

- In January 2021, water meters were installed in Brazilian dairy farms that operated in the pasture, semi-confined and, confined systems.
- Monthly monitoring of water consumption was carried out for 18 months.



CONSUMPTIONS MONITORED



Animals' drinking water
(647 water meter readings)



Washing of the milking parlor
(1,122 water meter readings)

MATERIAL AND METHODS

Animals' drinking water (647 water meter readings)

PASTURE-BASED SYSTEM



136 (21%) water meter readings

SEMI-CONFINED SYSTEM



304 (47%) water meter readings

CONFINED SYSTEM



207 (32%) water meter readings

MATERIAL AND METHODS

Washing of the milking parlor (1,122 water meter readings)

PASTURE-BASED SYSTEM



257 (22.9%) water meter readings

SEMI-CONFINED SYSTEM



611 (54.4%) water meter readings

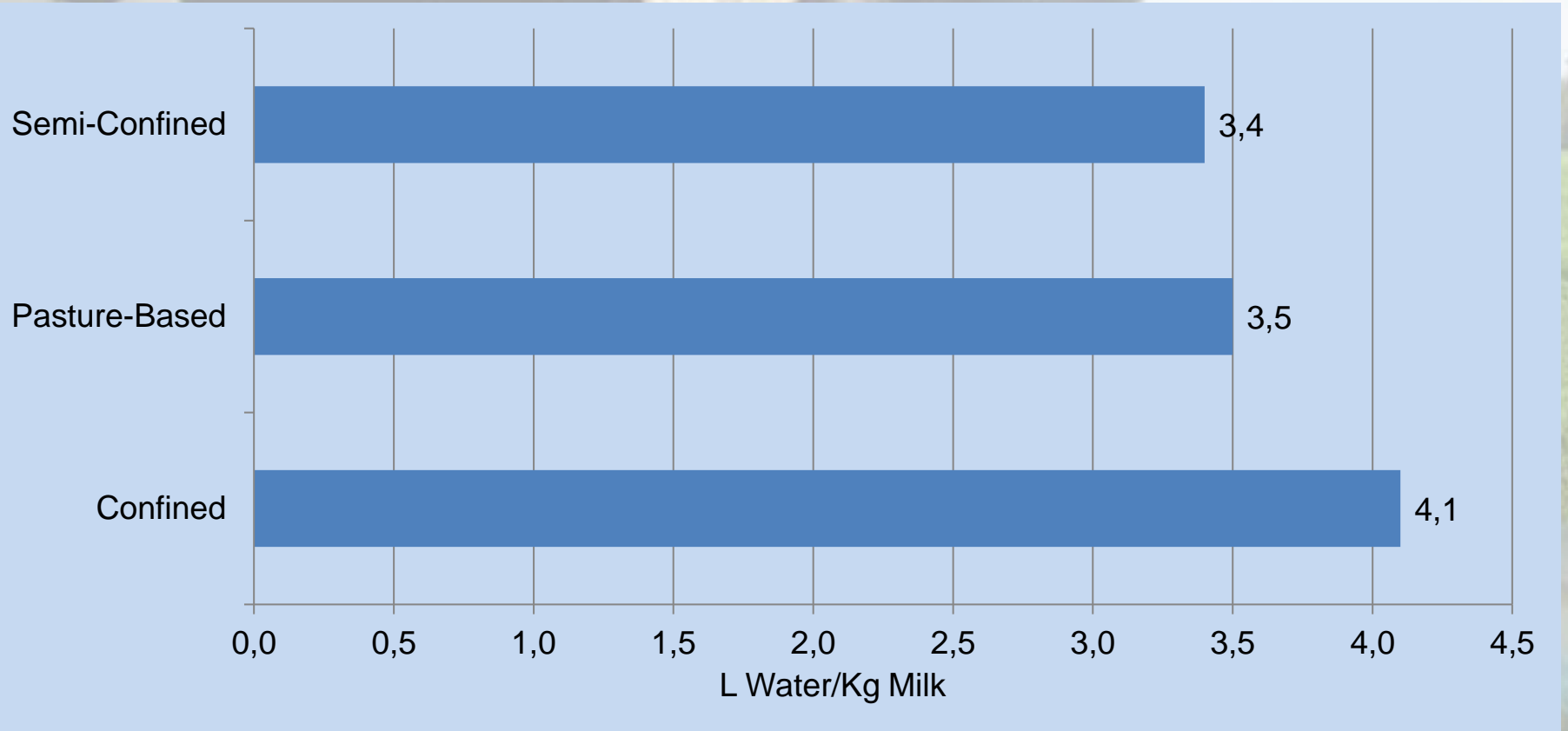
CONFINED SYSTEM



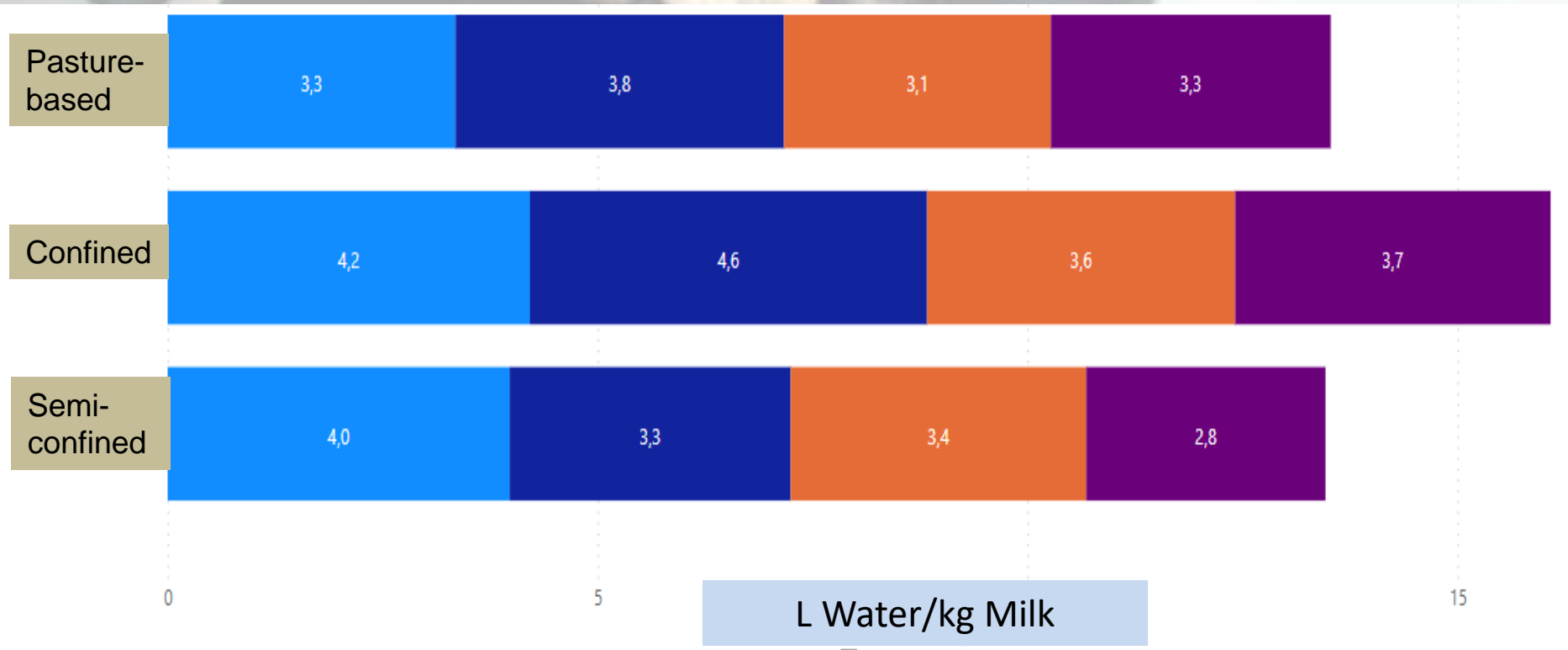
254 (22.6%) water meter readings

RESULTS AND DISCUSSION

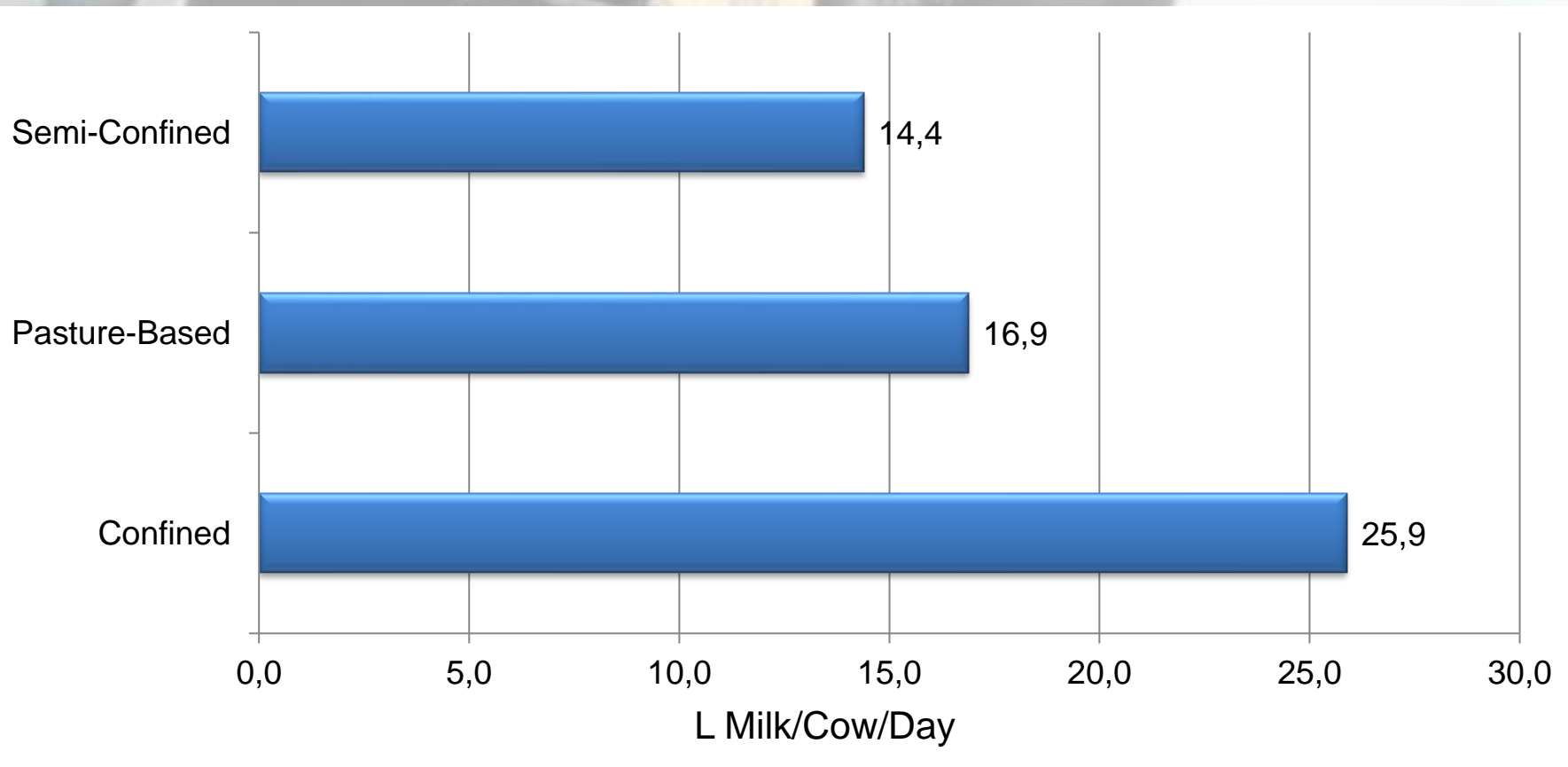
MEDIANS L WATER/KG MILK – ANIMALS' DRINKING



MEDIANS L WATER/KG MILK BY QUARTER ANIMALS' DRINKING

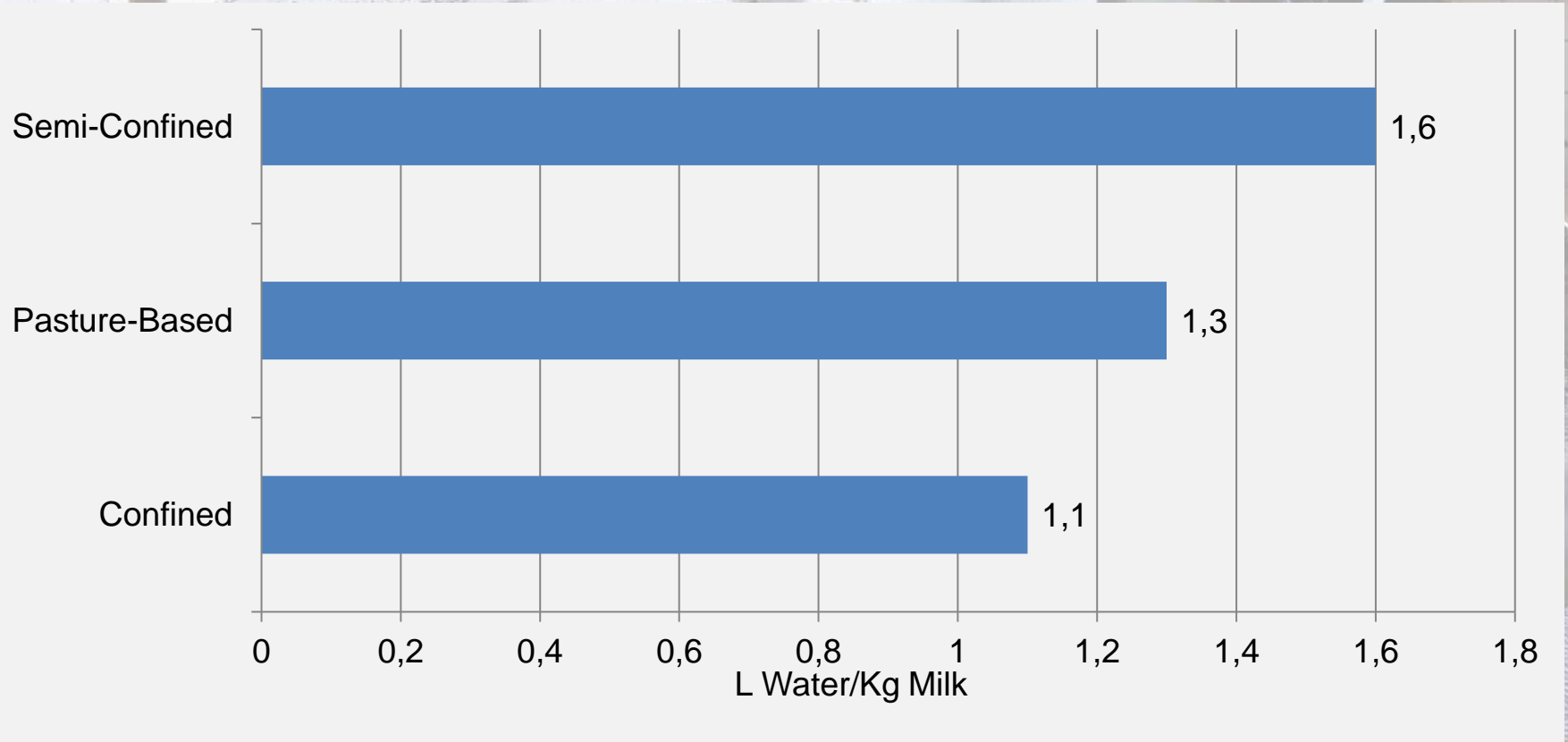


AVERAGE L MILK/COW/DAY

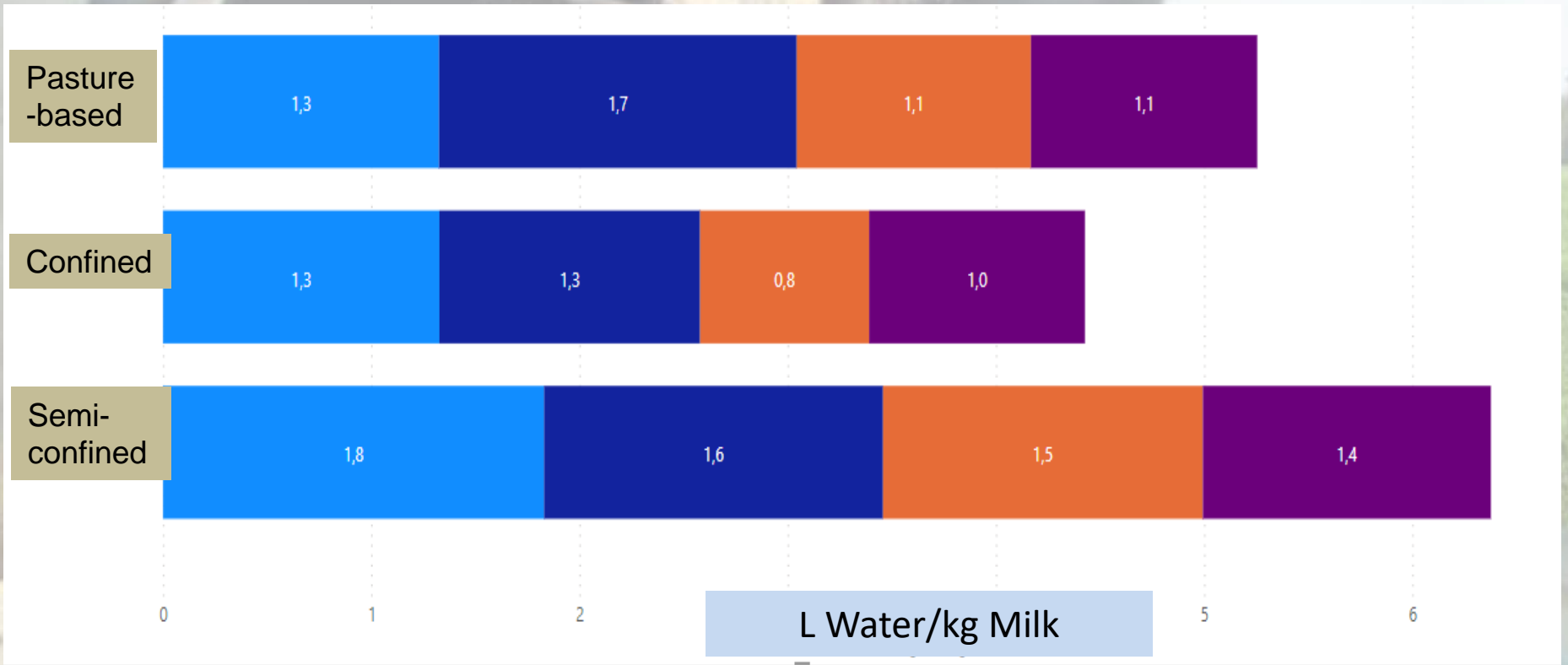


RESULTS AND DISCUSSION

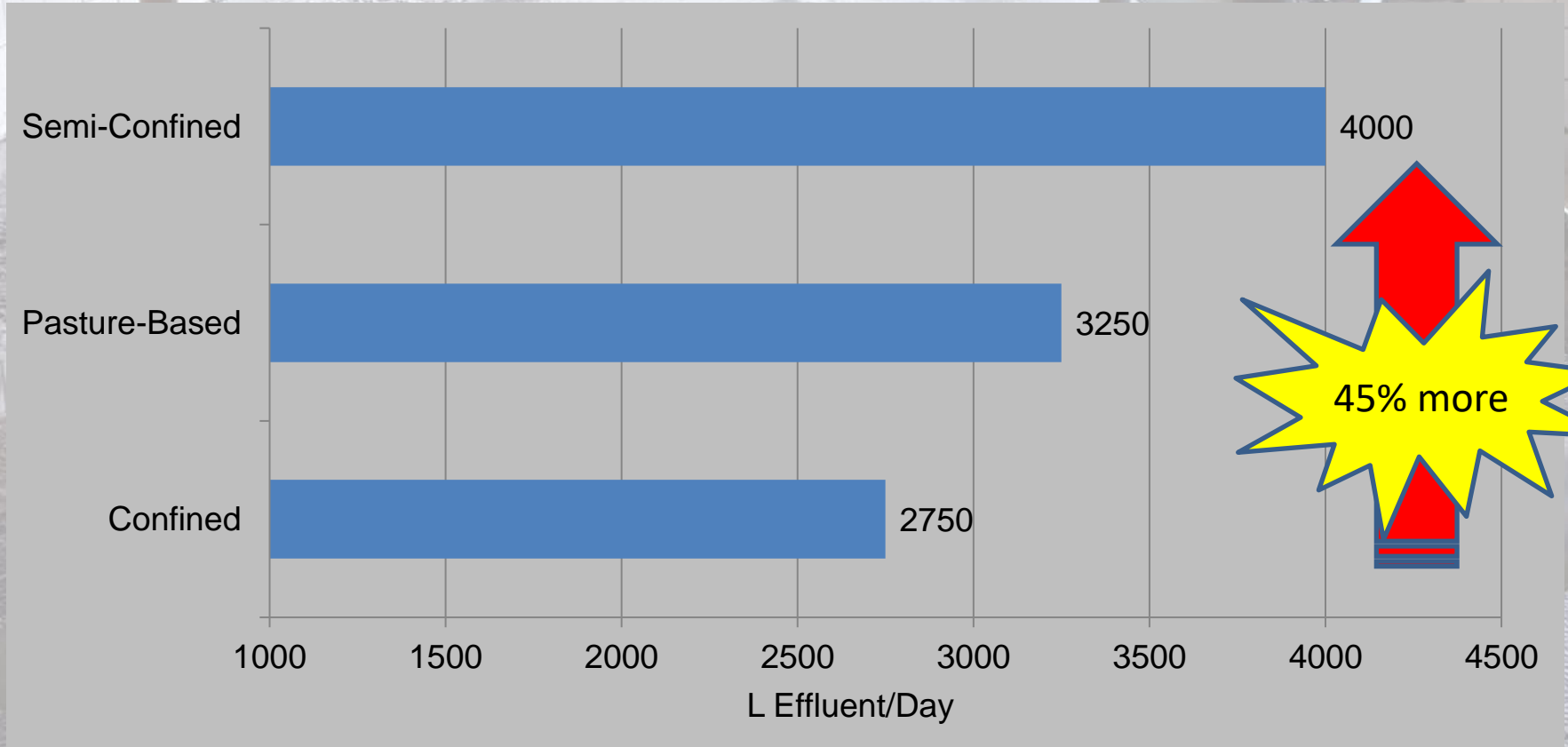
MEDIANS L WATER/KG MILK – WASHING MILKING PARLOR



MEDIANS L WATER/KG MILK BY QUARTER WASHING MILKING PARLOR



A FARM WITH 100 LACTATING COWS AND AN AVERAGE OF 25 KG OF MILK/COW/DAY WILL GENERATE THE FOLLOWING VOLUME OF EFFLUENT



The volume of washdown water used dependent on:

- ✓ The volume of manure generated in the milking area;
- ✓ Frequency of washdown;
- ✓ The area, design and fall of the yard to be washed down and the time this takes.

Washing milking parlor is a very variable practice, which determine the variability of the indicator.

CONCLUSIONS

A black and white cow is the central focus, standing in a grassy field. In the background, a person wearing a dark cap and a light-colored shirt is visible, possibly milking the cow. The scene is outdoors with trees in the distance under a bright sky.

The type of production system influences the value of the indicator liters of water per kilogram of milk.

Other productive aspects should be considered in understanding the indicator for the uses consumption of the animals and washing parlor

Based on these benchmark values, farmers, agroindustry and managers will be able to evaluate the farm's water performance and establish targets for efficient use of water for dairy farming.

THANK YOU

JULIO CESAR P. PALHARES
julio.palhares@embrapa.br



Embrapa

Southeast Livestock