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Comparison of fish quality (*Channa micropeltes*) in natural ecosystems and farmed systems in Southeast Asia

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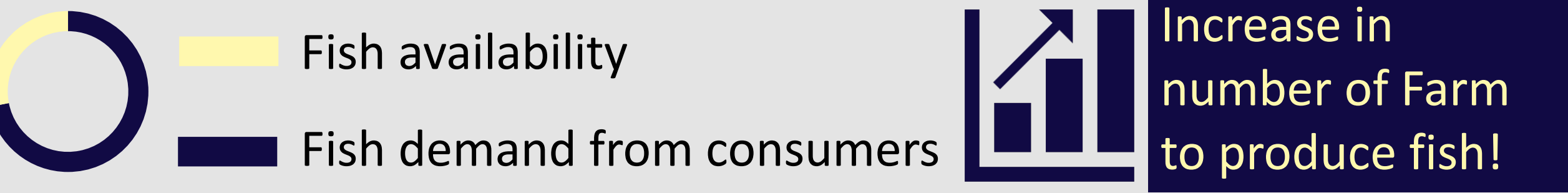
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INTRODUCTION

- Core diets and food security in Southeast Asia.
- Threaten ecosystem and fish species (Yoshimura et al., 2022).

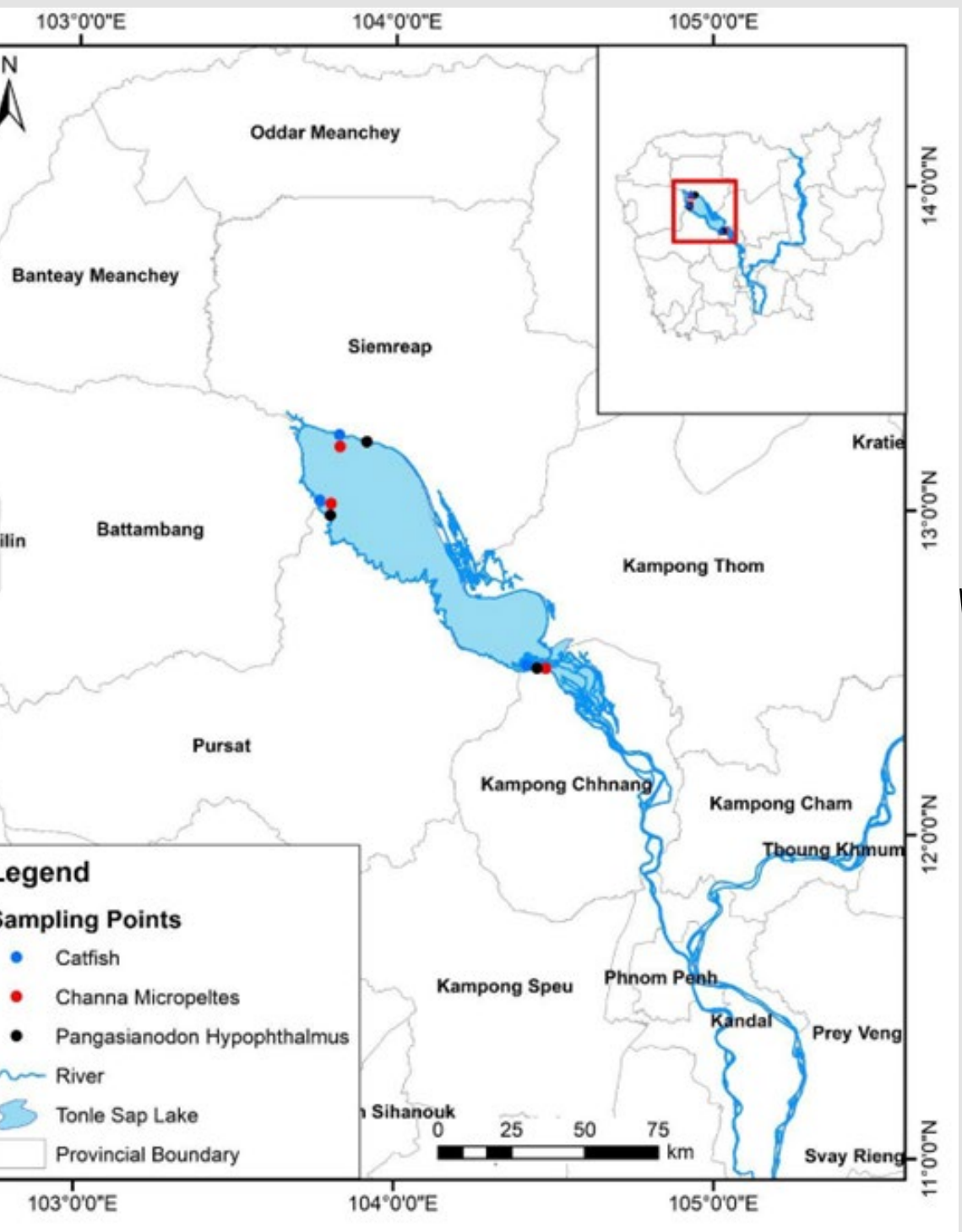


✓ *Channa micropeltes* (CM)= most popular specie in aquaculture (Barreto et al., 2022)

OBJECTIVES

Assessment the impact of fish growth conditions on their overall nutritional profiles and contamination (heavy metals and mycotoxins).

METHODOLOGY



- Sampling site: 3 Locations (Battambang, Siem Reap and Kampong Chhnang Province).
- n=18/each system
- Placed under ice box => Laboratory
- Store at -20°C for analysis

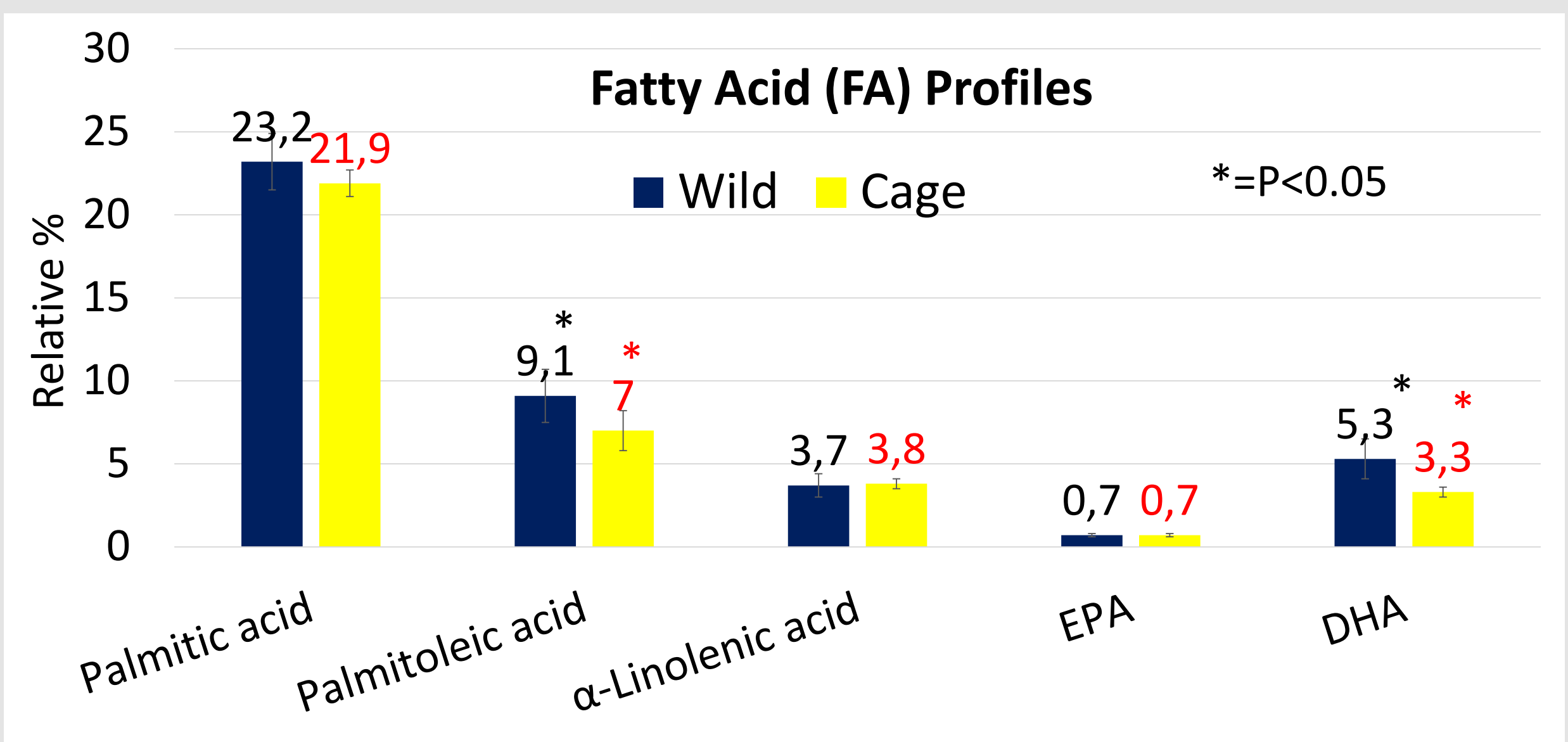
Parameters: Morphology, pH, acidity, moisture content. protein, lipids, ash, mineral profiles, heavy metals, fatty acid profiles and mycotoxins.

RESULTS

- CM grown in cage are bigger than in wild
- pH and acidity : no significant different

Parameters	Wild	Cage
Moisture (%)	77.2±2.4*	74.8±3.1*
Protein (g/100g)	18.6±2.1*	20.1±1.2*
Lipids (g/100g)	2.0±0.7***	3.8±0.7***
Energy (kcal/100g)	92.7±10.0***	115.4±8.6***
Ash (g/100g)	1.2±0.1***	1.4±0.17***

- Cage fish: more dense in protein, lipids, energy and ash.
- Mineral profiles: no significant different between system except P, Ca and Fe. All contents < MRV/100g

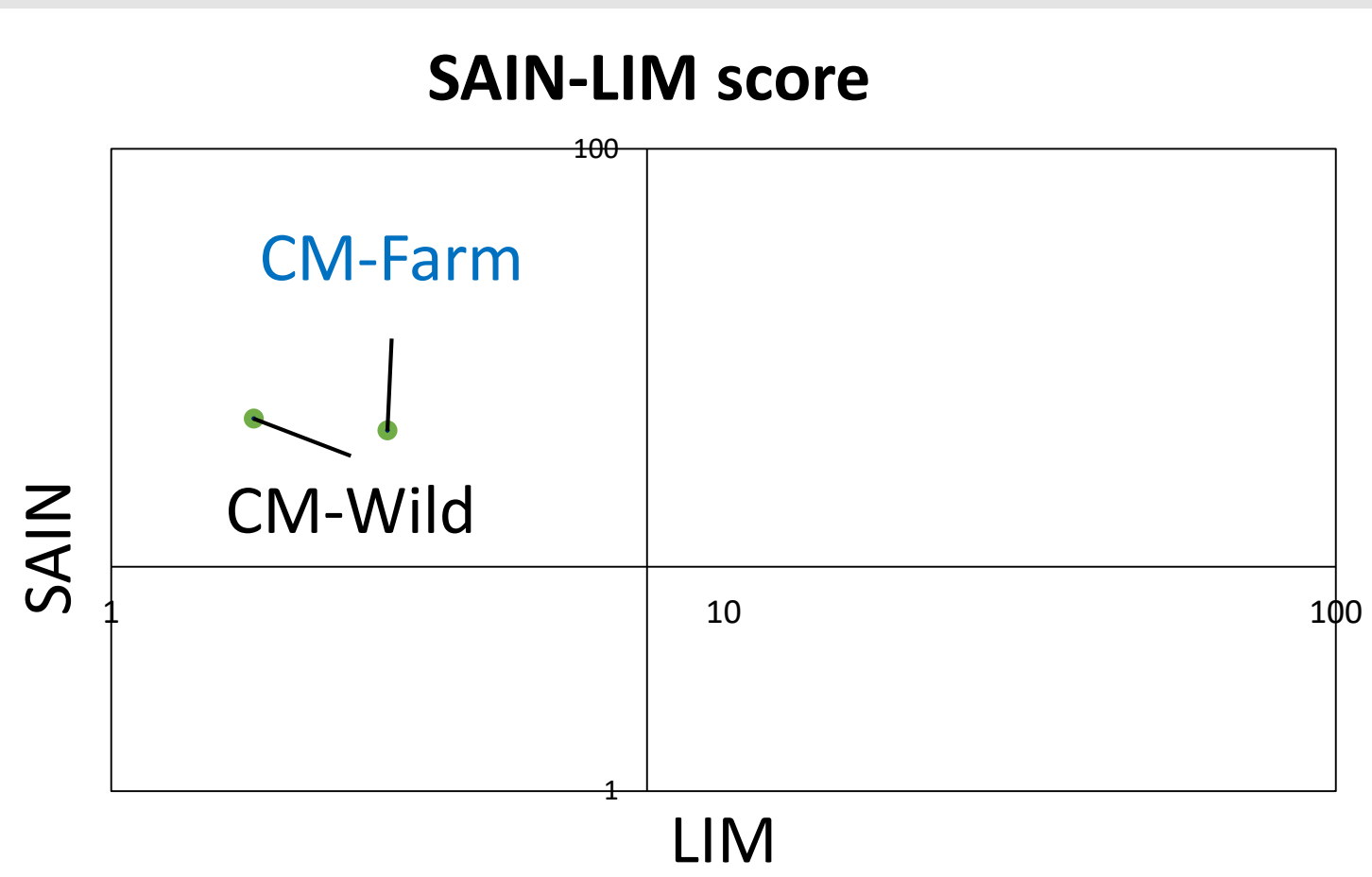


- Most abundance FA: Palmitic acid
- DHA in CM wild > DHA in CM cage

Mycotoxins were not detected!!!

- SAIN and LIM nutritional score: compare foods according to their content of “Positive = SAIN” and “Negative = LIM” nutrients (Darmon et al., 2009).

RV_i:daily recommended value for nutrient i; E_i is the energy (in kcal) in 100 g of fish
MRV_i: daily maximal recommended value for nutrient I; n: number of nutrient



$$SAIN = \frac{\sum_{i=1}^{i=15} ratio_i}{15} \times 100$$
$$With ratio_i = \left[\frac{nutrient_i}{RV_i} \right] \times \frac{100}{E_i}$$
$$LIM = \frac{\sum_{i=1}^{i=n} ratio_i}{n}$$
$$With ratio_i = \left[\frac{nutrient_i}{MRV_i} \right] \times 100$$

- SAIN-LIM3:** SAIN >5; LIM<7.5 Group of food recommended for health

CONCLUSION

- ✓ For CM: cage system gave more dense nutrient fish.
- ✓ According to SAIN-LIM, the global nutritional profile, classification of CM as in food recommended for health.
- ✓ Similar heavy metal profiles between cage and wild system, the value are far from the MRV/100g of fresh fish.

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