



# MILK QUALITY BASED ON SOIL FERTILITY AND PASTURE COMPOSITION IN FLECKVIEH SYSTEMS IN THE PERUVIAN AMAZON



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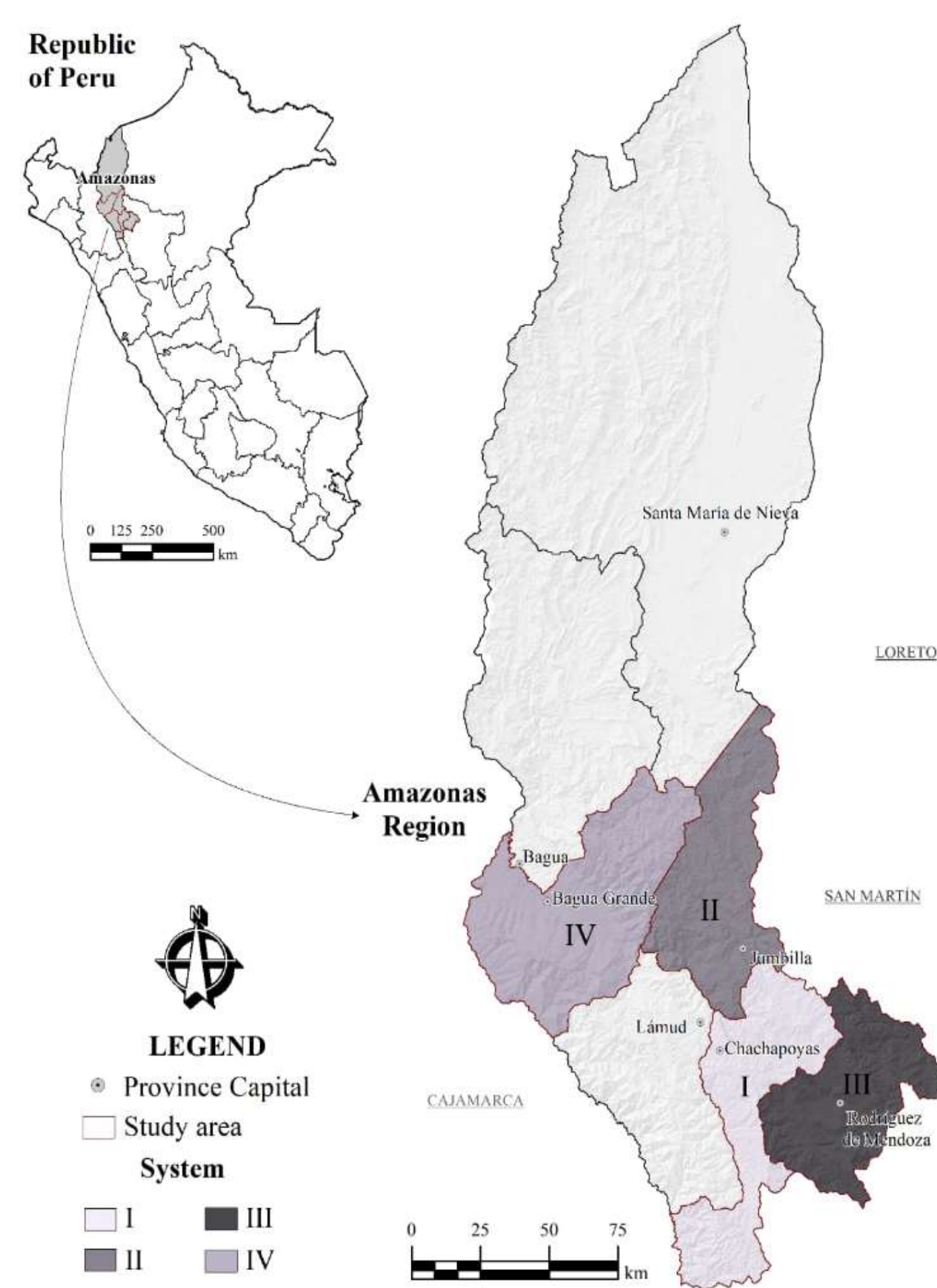
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## INTRODUCTION

Milk quality can be affected by the nutritional composition of pastures and soil fertility in the Peruvian Amazon. Understanding how these factors impact milk performance is essential to guarantee food security. Therefore, the present study aims to assess the relationship between milk quality based on soil fertility and pasture nutritional composition.

## METHODOLOGY

- **Location:** Amazon region, Peru (Fig. 1).
- **Subareas:** Chachapoyas (System I; n = 2), Bongara (System II; n = 4), Rodríguez de Mendoza (System III; n = 2), and Utcubamba (System IV; n = 2)



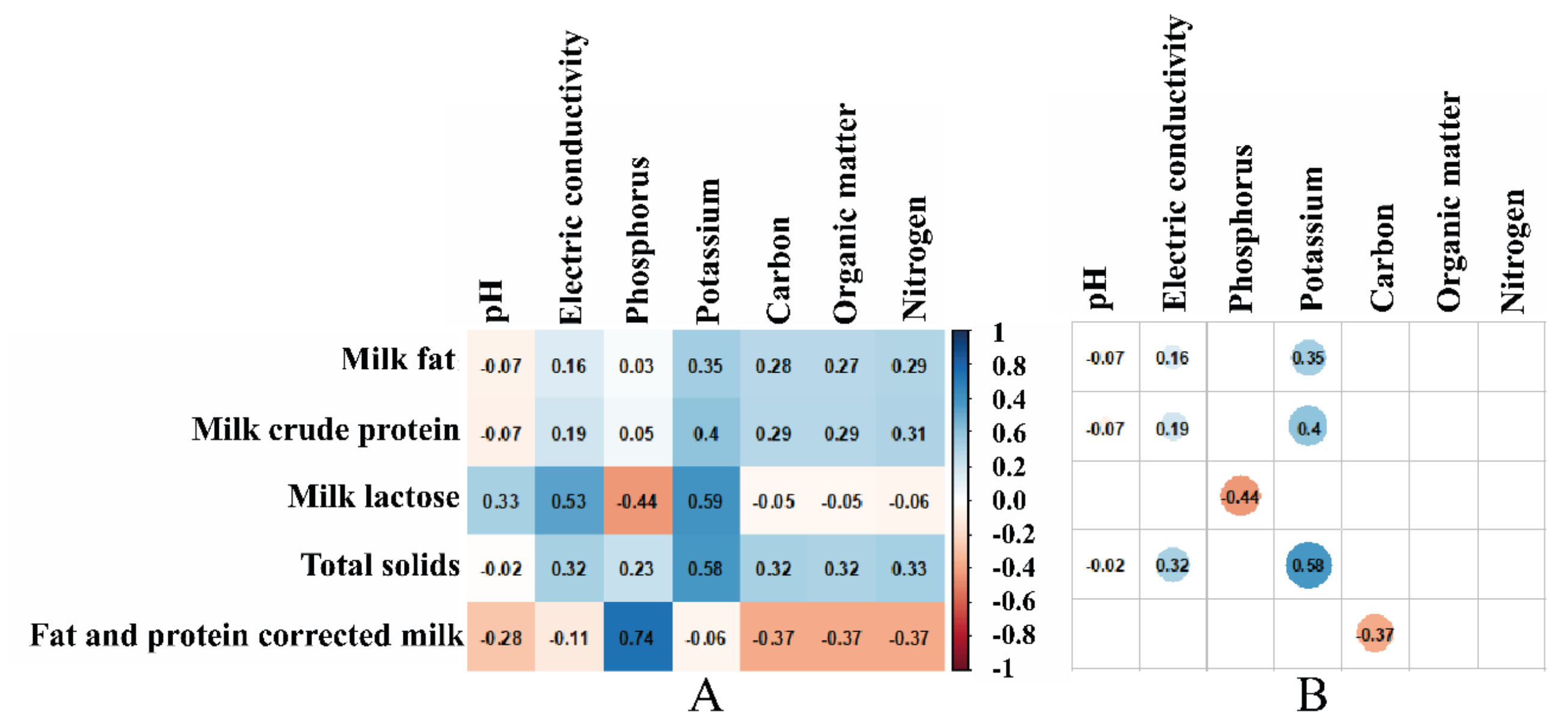
**Fig. 1.** Distribution of the Fleckvieh cattle production systems geographically within the Amazon region.

- **Variables measured:**
  - ✓ **Soil:** pH, electrical conductivity, organic matter, phosphorus, available potassium and nitrogen.
  - ✓ **Milk:** crude ash, crude protein, lactose, fat and total solids.
  - ✓ **Pasture:** moisture, crude protein, crude ash, fat, in vitro dry matter digestibility and gross energy.
- **Statistical analysis:**

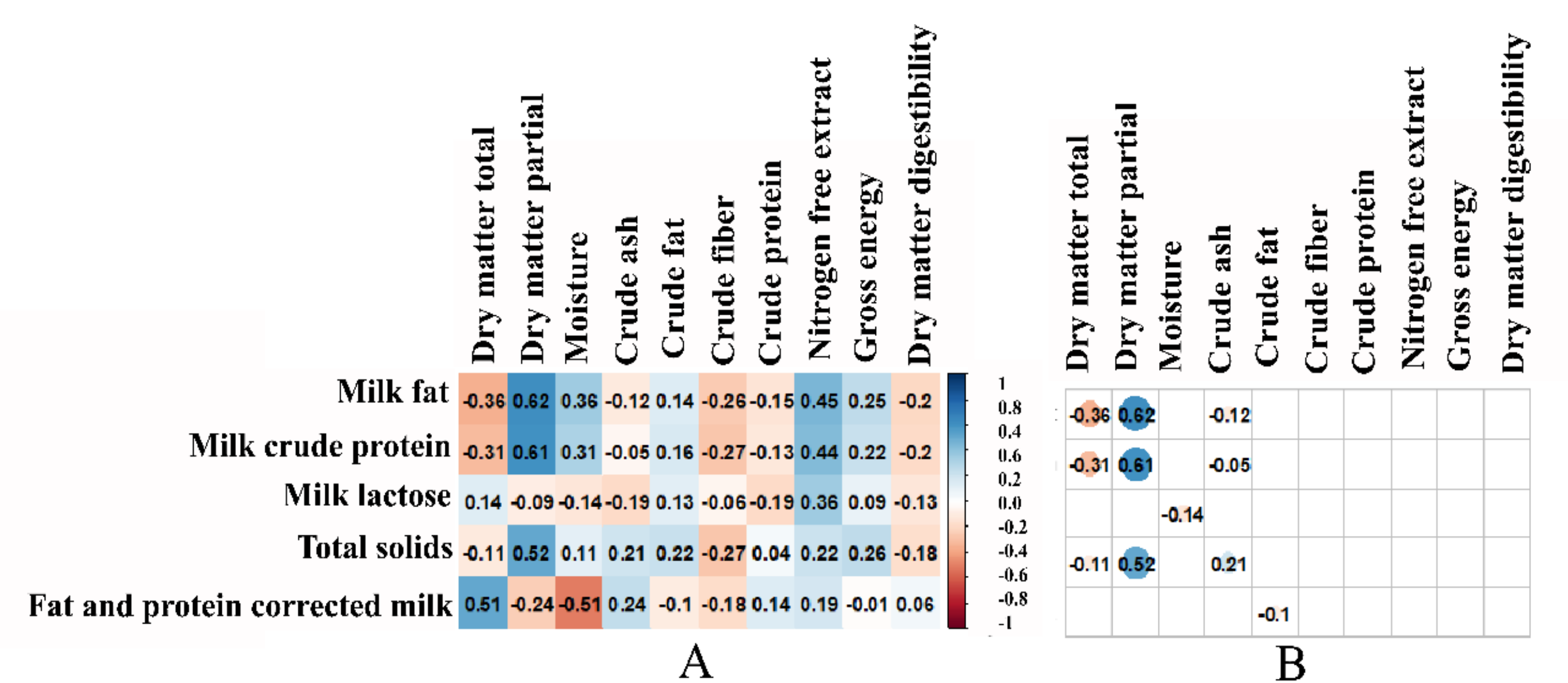
Comparison between systems was done using Duncan's statistical test ( $p < 0.05$ ). Additionally, correlation analysis was performed using Pearson correlation ( $r$ ) in R 4.2.2 software.

## RESULTS

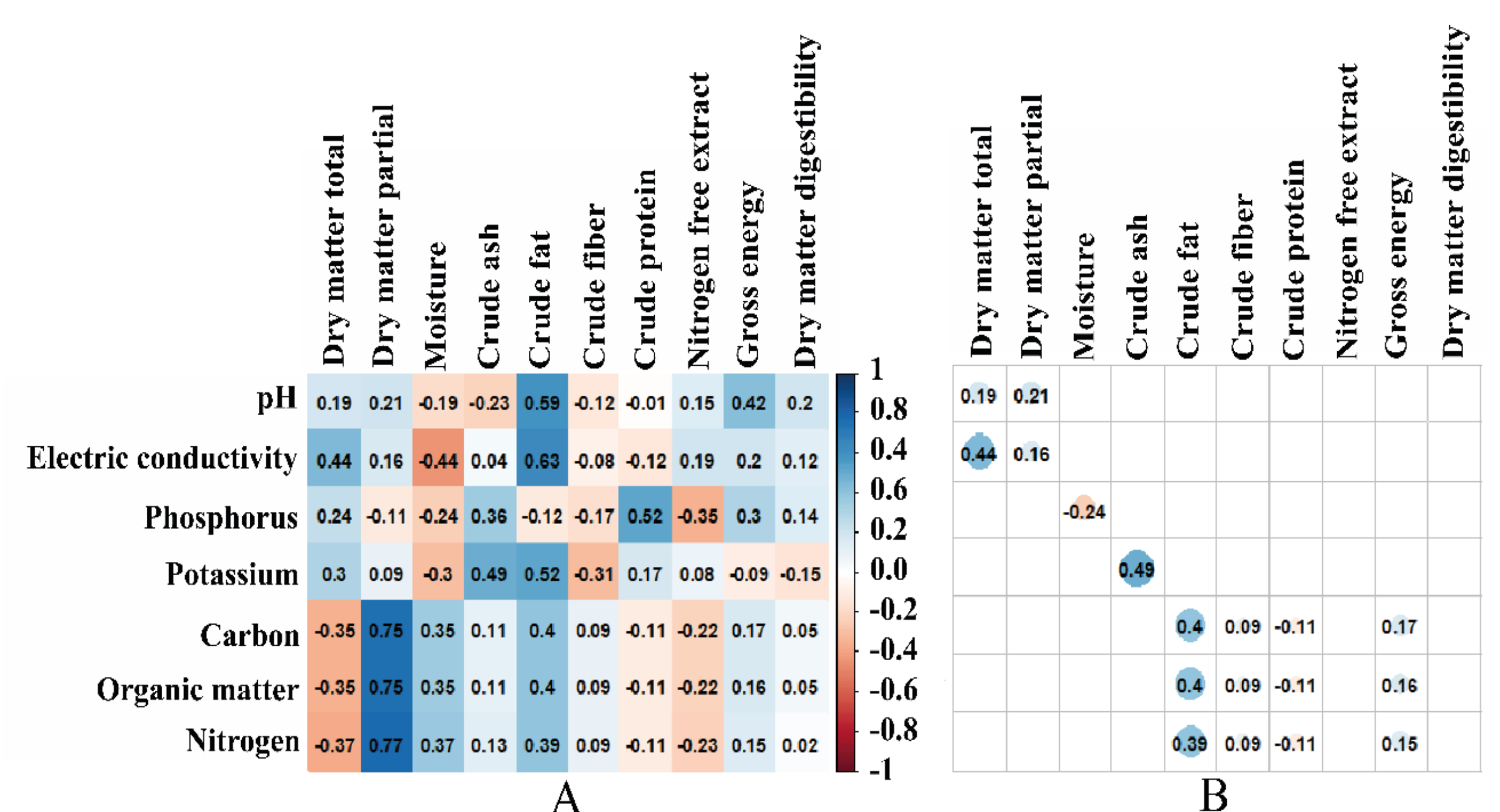
- Strong correlations were identified between pasture partial dry matter with milk fat and milk crude protein, and moderate correlations with milk total solids (Fig. 2).
- Moderate correlations were found between total milk solids with soil potassium and milk crude protein (Fig. 3).
- Moderate correlations were observed between electric conductivity and pasture total dry matter, soil potassium and pasture crude ash (Fig 4).



**Fig. 2.** Correlations and significant correlation ( $p$ -value  $< 0.05$ ) between the milk components and pasture's nutrient composition in the Amazon region. A, General correlations; B, Significant correlations.



**Fig. 3.** Correlations and significant correlation ( $p$ -value  $< 0.05$ ) between the milk components and the soil fertility in the Amazon region. A, General correlations; B, Significant correlations.



**Fig. 4.** Correlations and significant correlation ( $p$ -value  $< 0.05$ ) between soil fertility and pasture's nutrient composition in the Amazon region. A, General correlations; B, Significant correlations.

## CONCLUSIONS

- The combined makeup of pastures and soil can influence the nutritional profile of milk in these systems.
- Implementing effective soil and pasture management strategies could enhance the overall productivity of these regimens.

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