

Model-Based Nitrogen Strategies for Sustainable Potato Production

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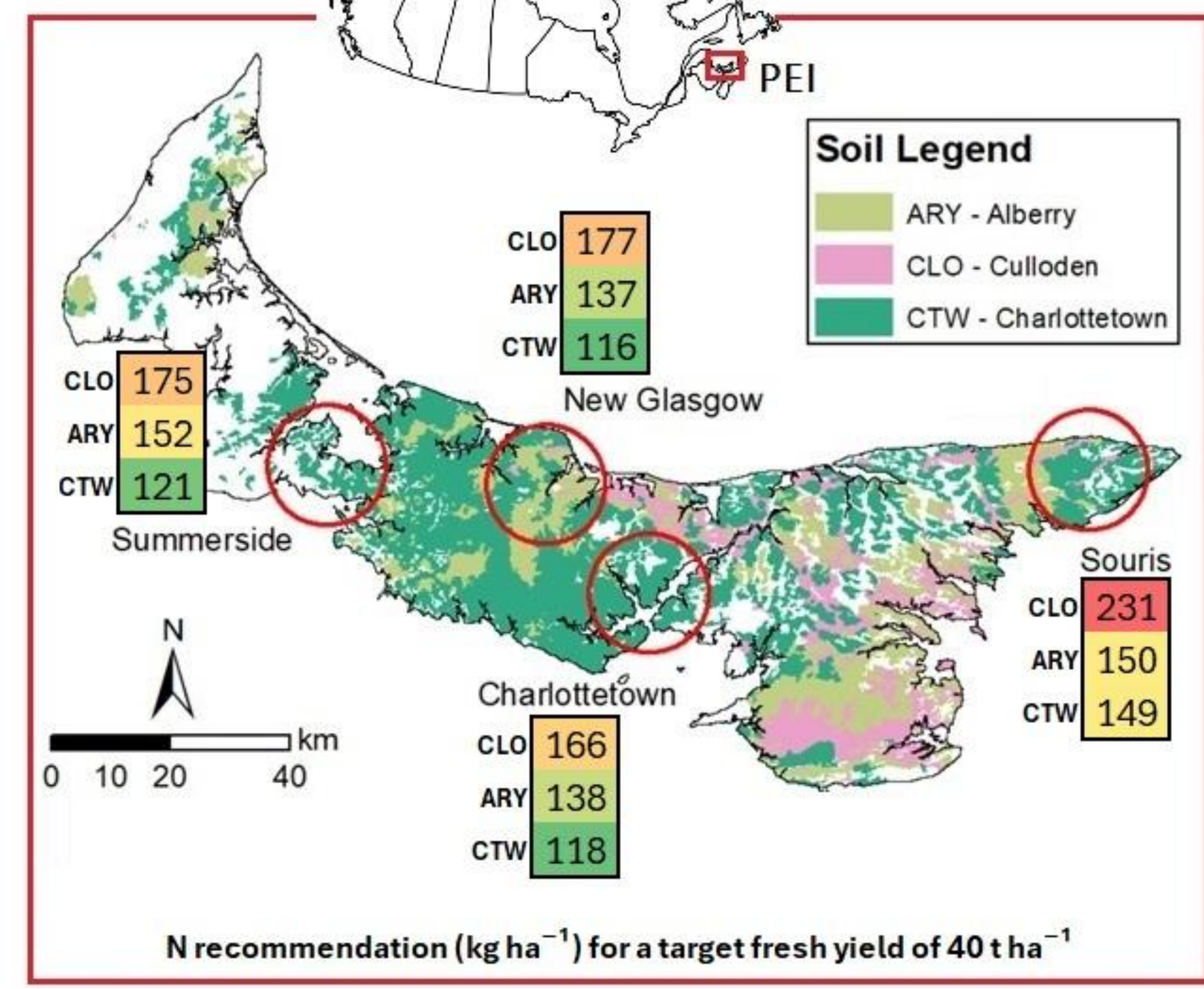
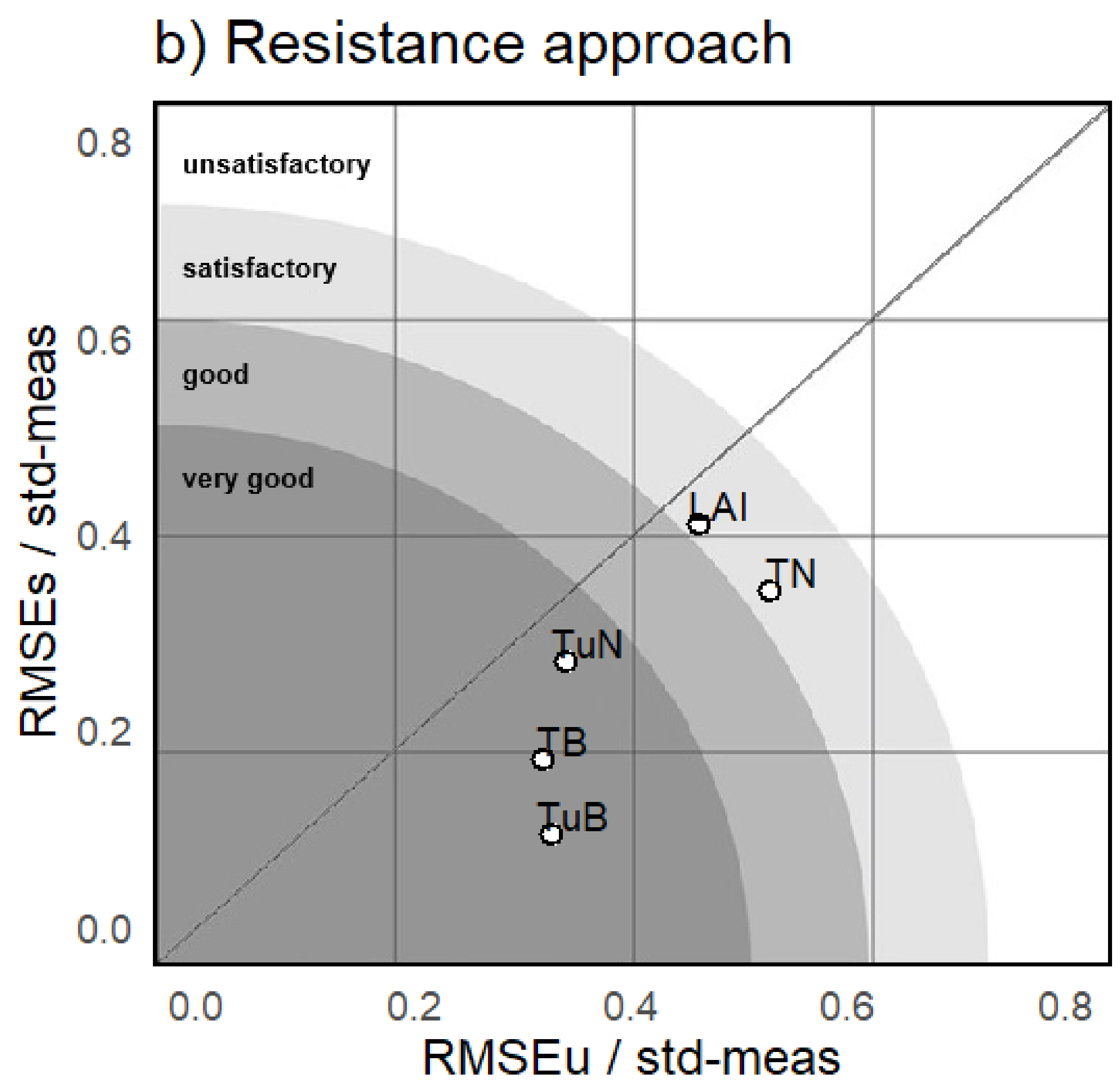
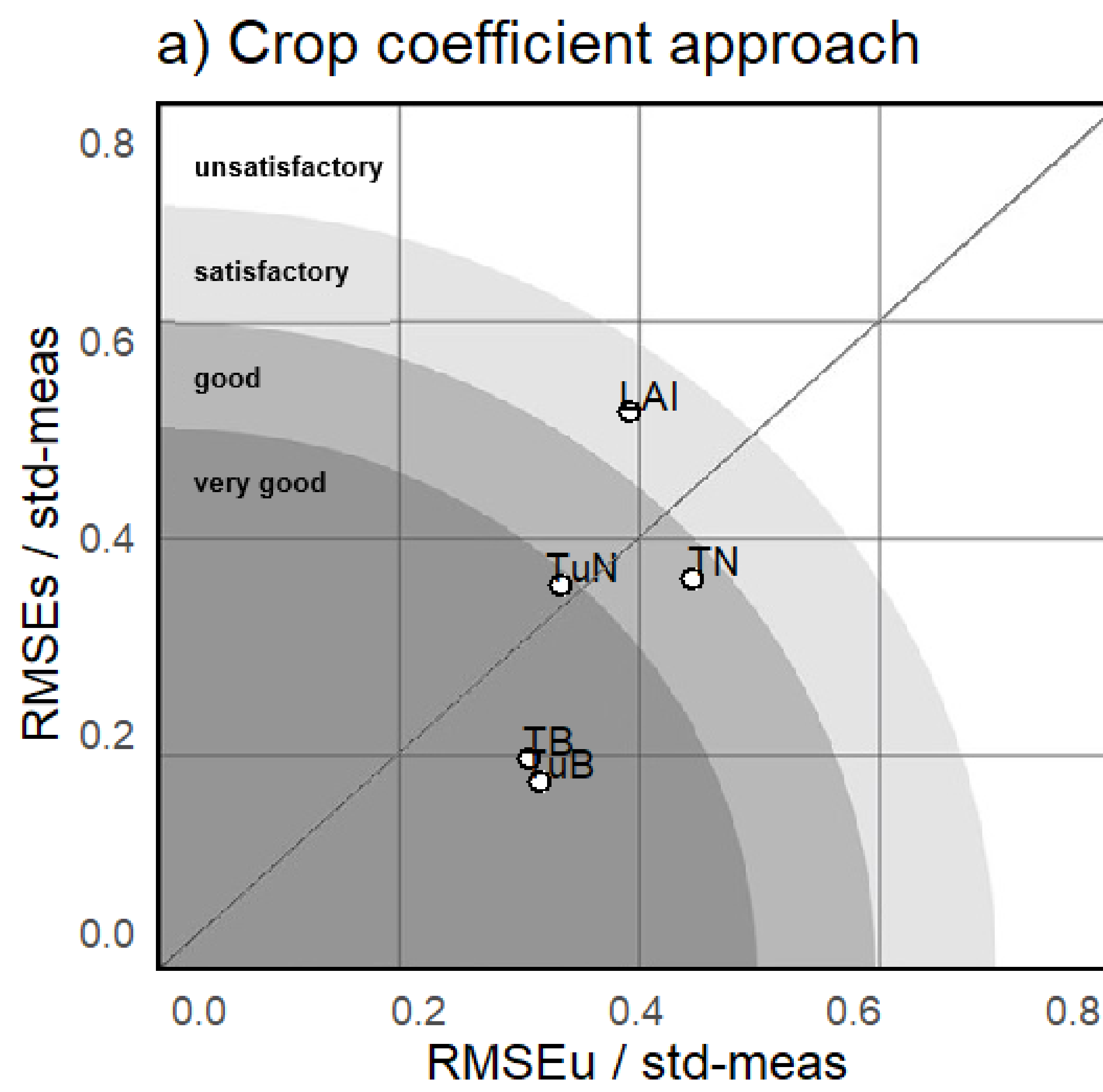
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Problem: Soil and climate drive nitrogen needs → fixed N recommendations are inefficient.



Approach: Identifying NEMO

STICS v9.2 simulations (30 years) across 3 soils × 4 regions in PEI to identify soil- and climate-specific optimal N rates. Resistance approach improved LAI and biomass simulation with lower bias.

Key Findings

- **Soil drives N needs**
CLO: ~175 kg N ha⁻¹ vs CTW: ~121 kg N ha⁻¹ (40 t ha⁻¹ target, Summerside)
- **Region affects yield potential**
Souris shows lower yield potential due to cooler, windier climate
- **Model-based recommendations lower N use**
~35 kg N ha⁻¹ below current guidelines

