

## ABSTRACT

The challenges faced by local agro-growers and small-scale producers continue to increase. One of the key challenges they face is the inability to reach out to potential consumers, resulting in post-harvest waste and unstable income. These issues are largely driven by the absence of direct producer-to-consumer channels, with traditional supply chains being dominated by middle-men. Consumers, on the other hand, often face difficulties accessing fresh, organic, and locally sourced produce.

This dissertation proposes a novel, interactive e-micro farm platform that leverages geovisualization, digital interactivity, and smart crop management tools to connect local growers directly with nearby consumers. A core feature of the platform is its dynamic, map-based interface, which allows consumers to explore produce availability in real-time based on freshness, location proximity, and availability. Consumers can also subscribe to specific crops, receiving real-time notifications when produce is in season, ripe for harvest, or available for purchase. For growers, the platform offers crop-specific management tools to track the status of individual crops from ripening to harvest-ready or unavailable. It also facilitates grower-to-grower interaction, allowing farmers to view other farms, subscribe to their produce, and engage in a community circle for knowledge exchange.

By integrating digital technology, geovisualization and interactivity, the platform empowers both consumers and growers with tools that reduce food waste, foster sustainability, and enhance community engagement. This thesis demonstrates how such a data-driven, community-centered system can empower local economies, improve agro-resilience, and provide consumers with better access to fresh, locally sourced food.

**Keywords:** *e-micro farm, geovisualization, agro-produce foraging, agritech, smart farming, grower collaboration*