

Reintegrating Agriculture into the Urban Fabric: Resilience and Land Sustainability through Urban and Peri-Urban Farming in Morocco

Fatiha HAKIMI

Department of Plant Production, Protection and Biotechnology, Hassan II Institute of Agronomy and Veterinary Medicine, Rabat, Morocco

INTRODUCTION & AIM

Urban and peri-urban agriculture (UPA) in Morocco is a strategic response to rapid urbanization, climate change, land degradation, and food insecurity.

Case studies from Rabat, Casablanca, and Meknès highlight UPA's role in:

- Enhancing food sovereignty
- Preserving ecosystem services and cultural landscapes
- Supporting inclusive livelihoods (women and youth)

Aim: To assess how UPA contributes to urban resilience and sustainable land systems.



Figure 1: Agricultural systems in Urban and Peri-Urban areas of selected Moroccan cities

METHOD

- Spatial analysis of urban growth and land use dynamics.
- Fieldwork & case studies with farmers and stakeholders.
- Socio-economic and agroecological assessment to evaluate multifunctional roles of UPA.
- Study involved selective and stratified random sampling across 17 study areas, with 125 respondents surveyed across the 3 cities (Rabat, Casablanca, Meknès).
- Data collection was carried out using interviews and field surveys guided by an 85 question survey.

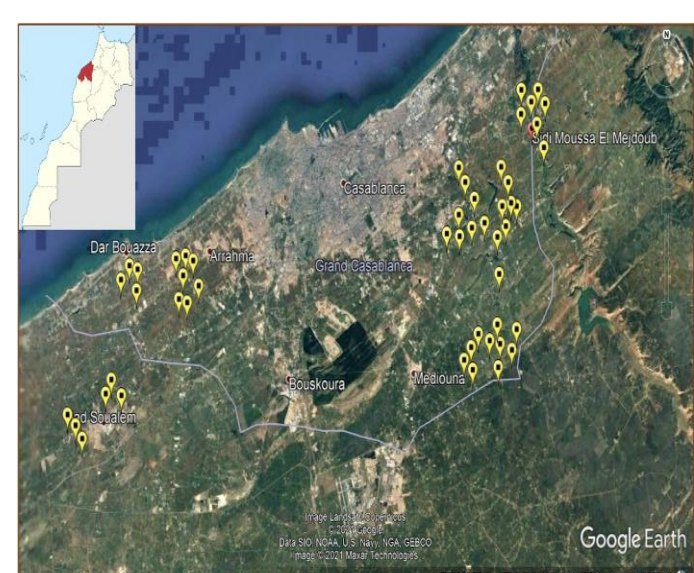


Figure 2: Geographical location of study sites in the outskirts of Casablanca metropolis

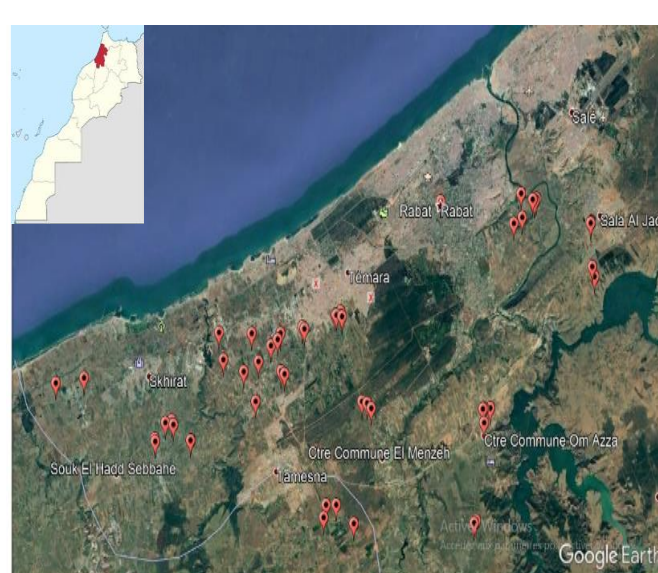


Figure 3: Geographical location of study sites in the outskirts of Rabat metropolis

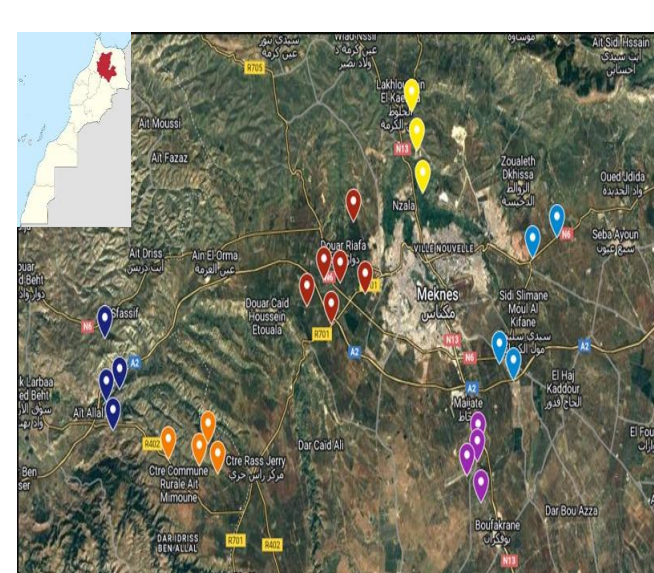


Figure 4: Geographical location of study sites in the outskirts of Meknès metropolis

- Descriptive statistical methods for data analysis:
 - Tests of normality and heterogeneity of variances.
 - Chi squareTest
 - Comparison of Means Tests
 - Principal Component Analysis (PCA)

RESULTS & DISCUSSION

Current state of UPA in the studied cities

City	Main Features	Key Challenges
Casablanca	Medium-large family farms (veg, fruits, cereals); 64% inherited	Land competition from urban sprawl
Rabat	Small diversified farms; waste recycling, environmental services	Water scarcity → need for efficient irrigation
Meknès	Mixed farming, olives; supplies local markets	Urbanization pressure on farmland

Opportunities

- **Food security & livelihoods:** In the three cities, UPA provides up to 30-60% of fresh produce for local markets, supports income diversification, and creates jobs.
- **Ecosystem services:** Waste recycling (composting reduces organic waste by ~50%), green space creation, and climate adaptation (reduced heat islands, improved soil fertility).
- **Resilience & land use:** Combines traditional practices with agroecological innovations (drip irrigation, intercropping, organic farming).

Challenges:

- Urban expansion consuming ~4,000 ha of farmland annually leading to increased competition for land use (Hakimi and Brech, 2021; Bounoua et al., 2024).
- Water scarcity and declining groundwater are putting greater pressure on both groundwater and surface water resources (Hakimi and Brech, 2021).
- Insecure land tenure and weak policy integration ((Valette and Dugué, 2017; Hakimi and Brech, 2021).

CONCLUSION

- ✓ UPA strengthens the urban–rural continuum and supports resilient, sustainable land systems.
- ✓ Institutional recognition and integration into urban planning frameworks are crucial.
- ✓ UPA contributes to UN SDGs 2 (Zero Hunger), 11 (Sustainable Cities), and 15 (Life on Land).

REFERENCES

- Bounoua, L., Lachkham, M. A., Ed-Dahmany, N., Lagmiri, S., Bahi, H., Messouli, M., ... & Thome, K. J. (2024). Urban Sustainability Development in Morocco, a Review. *Urban Science*, 8(2), 28.
- Valette, É. & Dugué, P. (2017). L'urbanisation, facteur de développement ou d'exclusion de l'agriculture familiale en périphérie des villes. *VertigO-la revue électronique en sciences de l'environnement*, 17(1).
- Hakimi, F. & Brech, M. (2021). Opportunities and Challenges of Peri-Urban Agriculture on the Fringes of the Metropolis of Rabat, Morocco. *International Journal of Food Science and Agriculture*. 5. 269-274.