

Hydroponics as a Scalable Urban Agriculture Business Model for Pakistani Cities

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EXECUTE SUMMARY

This insight focuses on urban agriculture through hydroponic systems, using iceberg lettuce to demonstrate the benefits of controlled-environment farming in Pakistan. Despite strong urban demand, traditional supply chains face seasonal disruptions, cold-chain limits, and quality issues. Hydroponics offers a viable alternative, enabling year-round production, better freshness, and lower post-harvest losses. While startup-led innovations show early promise, broader support is needed to scale hydroponic farming effectively.



What We Learned (Key Findings)

- Urban demand for iceberg lettuce is high, with one fast food chains requiring 3–4 tons per month
- Seasonal sourcing patterns lead to price volatility (PKR 175–220/kg) and inconsistent quality:
- Summer supply from Murree/Abbottabad: high prices and low volumes.
- Winter supply from Punjab plains: more stable, but still quality challenged.
- The existing supply chain is highly dependent on cold storage logistics and conventional farming—which offers only 4–7 days of post-harvest freshness.
- Only three major vendors serve national demand, indicating a fragile supplier base.
- Challenges include in the available produce are:
 - Pesticide residues, bad outer leaves, and manual labor-intensive trimming.
 - Climate-dependency, limiting consistent output.
- A startup in Lahore has initiated a hydroponic pilot focused on iceberg lettuce, indicating early-stage local innovation.



KEYWORDS

Urban agriculture business, hydroponics, climate resilience, food supply chain

What Needs to Change (Actionable Insights)

- Development of public-private partnerships between startups, research institutions, and large-scale food buyers.
- Develop R&D incentives for hydroponic inputs, including nutrient blends and automation tech.
- Launch capacity-building programs for growers and agripreneurs in urban food supply chains.

SOURCE OF INFORMATION

Sector day discussion and input from the industry by



Opportunities for Social and Economic Impact

“Hydroponic farming can play a pivotal role in localizing food production, reducing urban supply shocks in Pakistan’s cities. It enables meeting quality checks of international fast-food chains, cuts spoilage and transport costs. Hydroponics has the potential to create significant business and jobs across urban agriculture, distribution, and agritech services.”

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