



**The Nineveh Plains region is among the most agriculturally productive areas in Iraq.** The fight to remove the Islamic State (IS) from the Nineveh Plains impaired much of agricultural infrastructure there. Despite concerted efforts to restore supplies and livestock, as well as reconstruct infrastructure, the formerly displaced farmers who have returned have not yet achieved the production levels they had prior to the conflict and unemployment rates remain high.

Climate change, political conflict, land disputes, and subsequent instability have impeded many farmers from achieving sustainable agricultural yields. Factors such as inadequate production facilities and equipment, as well as farmers’ tendency to minimize costs, contributed to low productivity in the region prior to IS. These factors mean that Iraq currently relies on imports to fulfill its domestic food requirements. This research investigated the effects of forage prices, marketing value chains, livestock health management, agricultural extension access, and climate change on livestock production in the Nineveh Plains of Iraq.

Livestock and livestock products such as meat, wool, eggs, and milk play an important role in the economy of the Nineveh Plains. The regional need for consistent productivity of livestock is crucial, and especially an entrepreneur-led, cost-effective supply of feed that exceeds the basic maintenance needs of the animals. Though animals can forage, they need supplemental nutrition and improved health care to grow properly. This helps fight the diseases and mortality that derail rural farming efforts.

**After the IS crisis, climate change, newly-opened borders, and currency devaluation all had negative effects on the Nineveh Plains’ agricultural sector.**

**Results of Research and Recommendations:**

- **Currently, a lack of cost-effective, quality feed limits productivity.**

**Key Takeaways**

**The majority of people in the Nineveh Plains rely on agricultural production as a means of livelihood. Research shows:**

- A lack of **cost-effective, quality feed** limits productivity.
- Inefficient **health management practices** impact food quality.
- Poor **market and marketing systems** impact farmers’ ability to sell products.
- Inadequate **training and extension services** restrict quality livelihoods.
- **Climate change** threatens all, especially through increased water shortages.

**Recommendations:** A comprehensive database should be established by the Ministry of Agriculture Extension to document the various feedstuffs that are accessible in rural areas. This database should include information on the nutritive value of these novel feedstuffs, as well as the safety levels at which they can be incorporated into animal feed. Locally sourced ingredients can be an effective strategy to improve animal fodder, due to its cost, quality, sustainability, and community support. **Small scale feed mills should be incentivized by the government** to meet the demand for low-cost feed among local farmers. These mills present a promising employment opportunity for rural women and youth.

- **Currently, inefficient animal health practices impact food supply and quality.**

**Recommendations:** Often, animal diseases can be linked to vaccination failure due to poor management of the vaccines' cold chain. **Deworming medication and vaccinations should be consistently available through the Ministry of Agriculture Extension at the community and village level.** Increased government monitoring of animals, along with biosecurity measures to stop the transmission of diseases, would improve health management. Farmers should receive instruction on appropriate management techniques from the Ministry of Agriculture Extension services.

- **Currently, poor market and marketing systems impact farmers' ability to sell.**

**Recommendations:** The private-sector needs to establish a dependable and consistent year-round market chain for seasonal rural agricultural output. For livestock, this includes **hygienic private-sector slaughterhouses and preservation facilities** in rural marketplaces. This private-sector development would present an opportunity for female entrepreneurs to compete with commercial producers. Local producer associations and rural market yards could also benefit rural farmers.

- **Currently, inadequate training and extension services negatively impact livelihoods.**

**Recommendations:** Education is a crucial component for farmers and extension officers alike. Extension services should add focus on management and marketing, which are deeply connected to the supply of animals and quality feed and tied to food supply and livelihoods. The Ministry of Agriculture Extension, other governmental bodies, and private organizations should collaborate to ensure professional development extension includes emerging technologies and regularly engages with all farming communities.

- **Currently, Climate Change threatens to exacerbate these issues, especially through increased water shortage.**

**Recommendations:** Increased government water-harvesting projects would enhance water management and increase water productivity. Farmers need enhanced agricultural methods and inputs, such as rainfed crop varieties. Production methods should also include supplemental irrigation, which is an effective technique that stabilizes yields. In response to climate change, efficient drip irrigation projects should be introduced by the Ministry of Agriculture Extension throughout the region.

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**Photos:** Nineveh farms and enumerators. Credit: Research Team

