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Beyond Pastoralism: Survival-Led Livelihood Diversification among Bedouin Households in Rural Lebanon

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Abstract
Bedouin livelihoods in Lebanon have historically been associated with mobile pastoralism; however, contemporary household strategies remain poorly documented under the country's protracted economic and security crises. This study examines socio-economic conditions, agrarian engagement, livelihood diversification, resource access, and debt among Bedouin households in rural North and East Lebanon as shaped by historic trajectories and current crises. A cross-sectional survey was conducted with 361 households between May and October 2024 using a structured questionnaire. Data were analyzed using descriptive statistics, bivariate analyses, and multivariable binary logistic regression models, thereby accounting for regional differences. Most households were no longer directly engaged in agrarian production: only 22% were involved in livestock rearing and 13% in crop farming. However, agriculture remained the leading employment sector, indicating a shift from household-owned production toward agricultural wage labor. Productive resource access was restricted, particularly in the East of the country, where households relied mainly on rented pasture and crop land, with no owned pastureland reported among small ruminant keeping households. Households also reported crisis-related increases in fodder, veterinary, water, input, and land-rental costs, alongside herd size reduction and reduced surface of cultivated land. Livelihood diversification was common: 40% of households relied on more than one income source, and 79% were indebted, whereby debt was significantly higher in the North than in the East (88.9% vs. 69.2%, $p < 0.001$). These findings show survival-led livelihood diversification of a rural minority shaped by historically restricted access to resources, pressures of multiple contemporary crises, and debt.

Keywords: agrarian livelihoods; Bedouins; land access; livelihood diversification; livestock keeping; rural livelihoods

Introduction
Rural households in the Near and Middle East face overlapping economic, political, climatic, and conflict-related pressures that constrain agricultural production, markets, and employment. Livelihood diversification may create opportunities and spread risk, but it may also be distress-driven when land, livestock, and income are insufficient [1,2,3]. Distinguishing opportunity-led from survival-led diversification therefore requires attention to productive resources, income security, and debt.

Bedouin livelihoods were historically organized around mobile livestock keeping, seasonal grazing, and access to land and water. Sedentarization, land privatization, mobility restrictions, and market integration

have transformed these systems across the Middle East [4]. In Lebanon, documentation problems, weak institutional recognition, and restricted access to land and public services compounded these changes [5,6]. Contemporary Bedouin livelihoods are therefore increasingly sedentary, diversified, and unevenly agrarian.

Lebanon's economic crisis since 2019 has intensified currency depreciation, inflation, declining purchasing power, and production costs [7,8]. Household-level evidence on how Bedouin households combine agrarian and non-agrarian work, social support, and debt remains scarce [9]. This study examines livelihood portfolios, agrarian engagement, productive-resource access, and indebtedness in rural North and East Lebanon, asking whether diversification reflects opportunity or survival under pressure.

Material and Methods

From May to October 2024, a cross-sectional survey covered 361 households from seven large Bedouin tribes in Akkar, Bekaa, and Baalbeck-Hermel governorates: 172 in the East and 189 in the North (Fig. 1). Probability proportional to estimated tribe size guided sampling.

Trained fieldworkers interviewed household heads face-to-face in Arabic using a Survey123 questionnaire. It covered household composition, income-generating activities, livestock and crop production, land and pasture access, income sources, social assistance, debt, and crisis impacts. Participation was voluntary, oral consent was obtained, records were anonymized, and ethical approval was granted by the University of Kassel ethics board.

Data were analyzed in R 4.4.3. Categorical variables are reported as frequencies and percentages; continuous variables as means and standard deviations or medians and interquartile ranges. Regional comparisons used chi-square, Fisher's exact, or Wilcoxon rank-sum tests. Separate multivariable logistic regressions examined factors associated with livestock rearing and crop farming. Adjusted odds ratios are reported with 95% confidence intervals; $p < 0.05$ indicated significance.

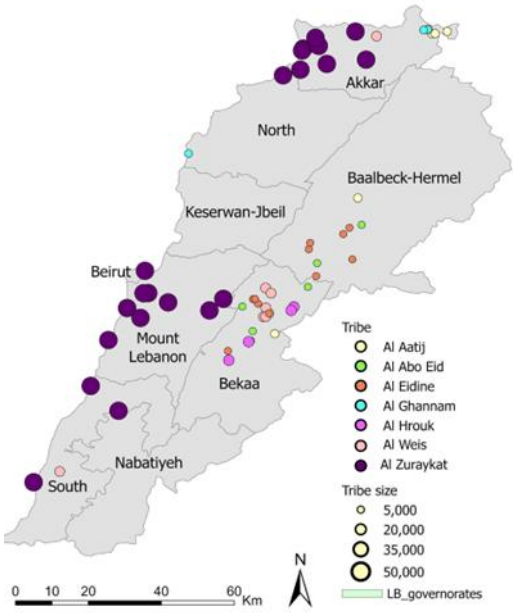


Fig. 1. Distribution of the seven surveyed Bedouin tribes in Lebanon; interviews were conducted in the North and East.

Results and Discussion

Livelihood transition and employment

Most surveyed households were no longer directly engaged in own agrarian production. Overall, 22% kept livestock and 13% cultivated crops, while 69% followed non-agrarian livelihood strategies. Agriculture nevertheless remained the leading employment sector among income-generating household members in both regions. Economic sectors differed significantly between regions ($p < 0.001$): education, military employment, and other activities were more frequent in the North, whereas trade was more frequent in the East. This combination of limited household production and continued agricultural employment reflects a broader transition from pastoral ownership toward more market-dependent rural livelihoods.

Adjusted models associated livestock rearing with older household-head age (OR 1.03 per year, 95% CI 1.01-1.06, $p = 0.009$). Crop farming was more likely in the North (OR 3.34, 95% CI 1.56-7.15) and among larger households, older heads, and those with medium rather than low education.

Access to productive resources and crisis pressures

Access to pasture and cropland was strongly region-dependent. Among small-ruminant keeping households with pasture access, renting was the dominant arrangement overall. In the East, 69.0% rented pasture and the remainder relied on other lease arrangements; no household reported pasture ownership. In the North, 52.9% rented pasture and 35.3% owned it ($p < 0.001$). A similar contrast appeared for cropland: 93.3% of crop-farming households in the East relied exclusively on rented land, while in the North 46.9% cultivated owned land and 43.8% relied exclusively on rented plots. These differences echo evidence from other pastoral settings where land privatization and reduced mobility weaken customary grazing access [4,10].

The economic crisis further reduced the viability of own agrarian production. Livestock-keeping households reported higher fodder prices (96.2%), veterinary costs (81.0%), herd reduction (64.6%), and increased land rent (48.1%). Among crop-farming households, 85.1% reported higher input prices and 42.6% cultivated less land. The combination of rental dependence and rising input costs indicates contraction rather than accumulation of productive assets, particularly for households in the East.

Income portfolios and indebtedness

Income sources were diverse across the sample as 40.0% combined two or more. Median reported monthly household income was USD 300 (IQR USD 200-400). Self-employment was the most frequently reported source (36.6%), followed by a mixed category including agricultural and construction wage labor, public support, loans (33.8%), and private-sector employment (23.3%). Among households earning from their own livestock or crops, 68.0% also reported non-farm income.

Debt was reported by 287 households (79.5%). Indebtedness was significantly higher in the North than the East (88.9% versus 69.2%, $p < 0.001$). Among indebted households, 32.8% owed amounts equivalent to at least 12 months of household income, and 87.8% identified cash-flow shortages as the main reason for borrowing. This high debt burden supports an interpretation of diversification as a response to insufficient income rather than an expansion into secure, higher-return activities. Similar research shows that diversification and borrowing may become necessity-driven where rural households face restricted assets, unstable markets, and rising consumption costs [2,11].

Table 1. Selected livelihood indicators by region

Indicator	East	North
Households, n	172	189
One income source, %	56	64
Pasture rented, %	69.0	52.9
Pasture owned, %	0	35.3
Median income, USD/month	300	250
Indebted households, %	69.2	88.9

Regional expressions of survival-led diversification

Agrarian activities in the East depended heavily on rented land and purchased inputs. The North showed broader participation in crop farming and more pasture ownership, yet households were more frequently indebted and more often dependent on remittances, public-sector income, and savings. Thus, a broader mixture of income sources did not necessarily translate into greater economic security. In both regions, diversification was shaped by constrained access to productive resources and by the need to maintain consumption under crisis, consistent with the distinction between opportunity-led and survival-led livelihood strategies [1,3].

Policy implications and limitations

Agricultural and social-protection programs should combine access to productive resources with employment support and reliable social assistance, while recognizing that needs differ between the East and North [12,13]. The cross-sectional design cannot establish livelihood change over time, and security constraints excluded some Bedouin groups. Income and debt were self-reported and may be affected by recall or disclosure bias.

Conclusion

Bedouin households in rural Lebanon are neither simply abandoning pastoralism nor transitioning to secure alternatives. Their livelihood portfolios combine agrarian activities, wage work, self-employment, remittances, support, and borrowing. Restricted pasture and cropland access, rising production costs, and widespread debt expose the fragility of these portfolios. The evidence therefore points predominantly to survival-led diversification. Rural and social-protection policies should address region-specific constraints in land access, agricultural support, employment, and debt vulnerability. Longitudinal research is needed to determine whether these strategies enable future livelihood upgrading or further contraction of agrarian production.

Declaration of AI use

AI tools were used only for language editing and structuring. The authors reviewed all content and accept full responsibility for the final manuscript.

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