



Local Crops and Household Food Security in Timor-Leste: A PRISMA-Guided Systematic Review and Food-Systems Synthesis

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ABSTRACT

Food insecurity in Timor-Leste remains a chronic and seasonal condition that disproportionately affects rural households dependent on rain-fed subsistence agriculture, reflecting persistent structural weaknesses within local food systems. Although local crops have long supported traditional diets and household coping strategies, their integrated role in shaping food security outcomes has not been systematically consolidated across empirical research. This study aims to synthesize and interpret empirical evidence on the contribution of local crops to household food security in Timor-Leste using a food-systems perspective. A PRISMA-guided systematic literature review was conducted through structured searches of major academic databases, resulting in the inclusion of 40 eligible empirical studies that were analyzed using a narrative synthesis organized around the four dimensions of food security availability, utilization, and stability. The findings demonstrate that food insecurity is driven less by national food supply shortages than by seasonal production gaps, post-harvest losses, weak market integration, and increasing reliance on imported staples. Local crops, particularly maize, legumes, and wild foods, play a central role in stabilizing seasonal food availability, buffering household food shortages, and strengthening social coping mechanisms at the community level. The sustainability of these contributions is shaped by agroecological suitability, community-based seed systems, social, post-harvest management practices, and policy coherence across agriculture, nutrition, and market domains. The study concludes that repositioning local crops as socio-ecological assets within integrated and locally grounded food-systems strategies is essential for improving household food security and informing more effective and context-sensitive policy interventions

INTRODUCTION

Food insecurity remains a pressing global concern, particularly in countries where rural livelihoods depend heavily on rain-fed subsistence agriculture and where climate variability increasingly disrupts food production systems. Recent global assessments highlight that food insecurity is no longer driven solely by production deficits but by complex interactions among climatic stress, market volatility, and institutional weaknesses that disproportionately affect rural households (Clapp et al., 2022). In Timor-Leste, these dynamics are especially pronounced due to high dependence on seasonal rainfall, limited infrastructure, and restricted market connectivity, which collectively constrain household capacity to secure stable and nutritious food throughout the year (Anderson et al., 2021). This situates Timor-Leste within a broader global pattern of structurally embedded food insecurity in smallholder-dominated agrarian economies.

Within rural food systems, local crops play a central role in sustaining household food availability and buffering seasonal shortages, particularly where market access remains limited. Recent food systems research emphasizes that staple and indigenous crops contribute not only to caloric intake but also to dietary diversity and adaptive capacity when integrated into locally grounded food systems (Fanzo et al., 2020). In subsistence contexts similar to Timor-Leste, diversified crop portfolios have been shown to reduce vulnerability during lean seasons and strengthen household resilience to climatic and economic shocks (Jones et al., 2022). However, these contributions are often underrepresented in policy-oriented analyses that prioritize national supply metrics over household-level food system dynamics.

Despite increasing attention to food systems thinking, the empirical literature on local crops and food security remains fragmented, particularly in small island and post-conflict settings. Many studies examine agricultural productivity or nutritional outcomes in isolation, without systematically linking crop systems to the multiple dimensions of food security, namely availability, access, utilization, and stability (Blesh et al., 2021). This limitation is evident in Southeast Asian smallholder contexts, where localized evidence exists but is rarely synthesized to reveal cross-cutting mechanisms that connect production, consumption, and institutional factors (Giller et al., 2021). As a result, existing knowledge provides limited explanatory power for understanding why improvements in agricultural output frequently fail to translate into sustained household food security.

A further research gap concerns the limited integration of socio-ecological and institutional dimensions into analyses of local crop systems. Recent studies argue that food security outcomes are strongly mediated by factors such as community seed governance, social capital, post-harvest practices, and policy coherence, yet these elements are often treated as peripheral rather than central components of food systems analysis (Herrero et al., 2020). In contexts like Timor-Leste, where informal institutions and cultural practices play a significant role in food access and coping strategies, the absence of integrated synthesis

obscures critical pathways linking local crops to household resilience. This gap underscores the need for systematic reviews that move beyond sectoral silos.

To address these limitations, this study aims to systematically synthesize empirical evidence on the role of local crops in supporting household food security in Timor-Leste using a PRISMA-guided systematic literature review. Specifically, the review seeks to identify prevailing food security conditions and trends, examine how local crops contribute across the four dimensions of food security, analyze factors shaping the sustainability of local crop systems, and identify policy and research gaps relevant to food systems transformation. By organizing the synthesis within a food-systems framework, the study explicitly connects agronomic, social, and institutional evidence to household-level outcomes.

From a theoretical perspective, this review contributes to contemporary food systems scholarship by advancing an integrated interpretation of local crops as socio-ecological assets rather than isolated production inputs. Recent theoretical work highlights the importance of framing food security within systems that recognize interactions among ecological suitability, social institutions, and governance structures in shaping resilience (Ingram, 2020). By applying this lens to the Timor-Leste context, the study extends food systems theory into under-represented small island and post-conflict settings, offering insights into how local crop systems operate under compounded structural constraints.

Practically, the findings of this review provide evidence-based guidance for policymakers and development practitioners seeking to design more effective and context-sensitive food security interventions in Timor-Leste. The synthesis highlights why production-centric strategies alone are insufficient and underscores the importance of integrated approaches that align agricultural support with post-harvest management, nutrition objectives, and market development. Such insights are critical for informing policies aimed at strengthening household resilience, reducing dependence on food imports, and promoting sustainable and locally grounded food systems.

THEORETICAL REVIEW

Local Crops and Food Availability in Smallholder Food Systems

Recent food systems scholarship emphasizes that food availability at the household level is shaped less by aggregate national production and more by the temporal and spatial alignment between local production cycles and household consumption needs. Studies conducted in smallholder-dominated agrarian systems demonstrate that reliance on locally adapted staple crops enhances seasonal food availability, particularly in contexts characterized by rainfall uncertainty and limited market penetration (Samberg et al., 2021). Local crops, including cereals, tubers, and legumes, are frequently cultivated in diversified systems that reduce production risk and stabilize food supplies during climatically adverse periods. This evidence underscores the importance of production diversity as a structural determinant of household-level food availability rather than merely an agronomic outcome.

In rain-fed agricultural systems comparable to Timor-Leste, locally adapted crops are shown to outperform introduced varieties under low-input conditions, thereby reinforcing their role in sustaining household food stocks. Research in island and marginal agroecological zones indicates that traditional crop species often possess superior tolerance to drought stress and soil constraints, contributing to more reliable yields across seasons (Altieri et al., 2020). These findings suggest that local crops function as ecological buffers that mitigate seasonal food gaps, a mechanism frequently overlooked in food security assessments that prioritize yield maximization of selected commodities.

Household Access to Food and Market Integration Constraints

Food access is increasingly conceptualized as a function of income stability, market connectivity, and social exchange mechanisms rather than physical availability alone. Recent empirical studies highlight that households relying on local crops often maintain partial autonomy from volatile food markets, thereby reducing exposure to price shocks and supply disruptions (Bellemare & Barrett, 2020). In low-income rural settings, this autonomy is particularly significant during lean seasons when imported staples become less affordable. Local crop production thus operates as an indirect access mechanism by lowering dependence on cash-based food acquisition.

However, weak market integration can simultaneously constrain the potential of local crops to enhance food access through income generation. Evidence from developing agrarian economies suggests that inadequate infrastructure, limited aggregation capacity, and asymmetric market power restrict smallholders' ability to commercialize surplus production (Aggarwal et al., 2022). These structural barriers indicate that while local crops enhance subsistence access to food, their contribution to economic access remains contingent on broader food system conditions, including transport, storage, and market governance.

Utilization, Dietary Diversity, and Nutritional Outcomes

Food utilization, particularly dietary quality and nutrient adequacy, has emerged as a central concern in contemporary food security research. Studies increasingly demonstrate that production diversity at the household level is positively associated with dietary diversity and micronutrient intake, especially in subsistence-oriented systems (Ruel et al., 2021). Local crops such as legumes, root crops, and indigenous vegetables contribute essential micronutrients that are often absent in imported staple-based diets. These findings reinforce the role of local crops in supporting nutritionally adequate diets beyond caloric sufficiency.

Moreover, culturally embedded food practices influence how local crops are prepared, consumed, and shared within households. Recent qualitative research highlights that traditional food knowledge and preparation methods enhance nutrient bioavailability and align food utilization with cultural preferences (Kumar et al., 2021). Such evidence suggests that food utilization outcomes cannot be fully understood without considering the socio-cultural dimensions through which local crops are integrated into daily diets, a perspective particularly relevant for Timor-Leste's rural communities.

Stability, Seasonality, and Coping Strategies

Stability represents the temporal dimension of food security and is closely linked to households' capacity to manage seasonal variability and shocks. Longitudinal studies in smallholder systems show that households cultivating diverse local crops experience lower seasonal volatility in food consumption compared to those dependent on single staples or market purchases (Chege et al., 2023). Local crops contribute to stability by staggering harvest periods and enabling food storage practices that extend availability across lean months.

In addition, local crops play a critical role in household coping strategies during periods of climatic or economic stress. Evidence from climate-vulnerable regions indicates that households rely on resilient crop species, wild foods, and intercropping systems as fallback options when primary staples fail (Vaitla et al., 2021). These adaptive strategies highlight the stabilizing function of local crops within household food systems and emphasize their role in reducing chronic vulnerability rather than merely responding to acute shocks.

Agroecological Adaptation and Community-Based Seed Systems

Agroecological research increasingly recognizes farmer-led innovation and community-based seed systems as key determinants of sustainable food production. Studies conducted across diverse agroecological contexts reveal that locally managed seed systems enhance varietal diversity, seed availability, and adaptive capacity under climate stress (McGuire & Sperling, 2020). Such systems enable farmers to select and retain crop varieties that align with local environmental conditions and consumption preferences, reinforcing the resilience of local crop systems.

Furthermore, participatory approaches to crop development are associated with higher adoption rates and longer-term sustainability compared to externally driven interventions. Empirical evidence suggests that farmer participation in varietal selection strengthens knowledge exchange, social cohesion, and institutional trust, all of which contribute to more robust food system outcomes (Ceccarelli et al., 2022). These findings align with food systems perspectives that emphasize co-production of knowledge as a foundation for sustainable agricultural development.

Policy Coherence and Structural Constraints in Food Systems

Despite growing recognition of food systems complexity, policy frameworks often remain fragmented across agriculture, nutrition, and trade domains. Recent policy analyses indicate that continued prioritization of imported staples and commercial crops can undermine local food systems by disincentivizing local production and eroding traditional food practices (Béné et al., 2023). Such policy incoherence is particularly problematic in countries with limited fiscal capacity and high import dependence, where external shocks can rapidly translate into household food insecurity.

Scholars increasingly argue for integrated policy approaches that reposition local crops as strategic assets within national food security strategies. Evidence from comparative food systems research demonstrates that policies supporting post-harvest management, local value chains, and nutrition-sensitive agriculture yield more durable food security outcomes than production-focused

interventions alone (HLPE-FSN, 2022). These insights provide a critical foundation for rethinking food security policy in Timor-Leste through a systems-oriented lens.

METHODOLOGY

Research Design and Analytical Approach

This study adopted a qualitative systematic literature review design, guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses PRISMA 2020 framework, to ensure methodological transparency, analytical rigor, and replicability. Systematic reviews are particularly appropriate for synthesizing fragmented and interdisciplinary evidence, especially where empirical findings are dispersed across agricultural, nutritional, and development studies (Page et al., 2021). The qualitative and interpretive nature of the review enabled an in-depth examination of how local crops contribute to household food security across diverse contexts and methodological traditions. The review was explicitly structured around the four internationally recognized dimensions of food security, namely availability, access, utilization, and stability, within a food-systems analytical framework.

Scope of Evidence and Study Population

Rather than human participants, the analytical population of this study consisted of peer-reviewed empirical research and authoritative research reports focusing on food security and local crop systems in Timor-Leste. This population was selected to capture household-level food system dynamics embedded within agronomic, socio-economic, and institutional contexts. Systematic reviews drawing on documentary populations are widely recognized as robust approaches for generating cumulative knowledge in complex policy-relevant domains (Snyder, 2019). The final corpus of included studies reflects diverse geographic locations within Timor-Leste, multiple crop systems, and a range of methodological approaches, thereby enhancing the analytical breadth of the synthesis.

Search Strategy and Information Sources

A comprehensive and replicable search strategy was implemented across five major academic databases: Scopus, Web of Science, PubMed, CAB Abstracts, and Google Scholar. These databases were selected to ensure broad disciplinary coverage spanning agriculture, food systems, nutrition, and development research. Boolean search strings combined three conceptual clusters addressing food security outcomes, local crop systems, and the geographic context of Timor-Leste. Searches were limited to English-language publications to maintain analytical consistency and were conducted up to the most recent complete search date in 2024. The use of multiple databases and structured keyword combinations aligns with best practices for minimizing retrieval bias in systematic reviews (Bramer et al., 2018).

Eligibility Criteria and Study Selection Procedure

Clear inclusion and exclusion criteria were applied to ensure relevance and analytical coherence. Included studies were required to present empirical evidence on food security or food insecurity in Timor-Leste and to substantively engage with local crops within household or community food systems. Eligible

study designs encompassed qualitative, quantitative, and mixed-methods research, reflecting the interdisciplinary nature of food systems scholarship. Conceptual papers, studies lacking empirical grounding, or research not specific to Timor-Leste were excluded. Study selection followed a four-stage PRISMA process consisting of identification, screening, eligibility assessment, and final inclusion, thereby ensuring procedural transparency and reproducibility (Moher et al., 2020).

Data Extraction and Analytical Procedures

Data extraction was conducted using a standardized extraction template designed to capture bibliographic details, methodological characteristics, geographic focus, crop types, food security dimensions addressed, key findings, and reported limitations. This structured approach facilitated systematic comparison across heterogeneous studies and supported thematic coding. Due to substantial variation in study designs, indicators, and outcome measures, statistical meta-analysis was not appropriate. Instead, a narrative synthesis approach was employed, enabling the integration of qualitative and quantitative evidence through thematic interpretation. The synthesis was explicitly mapped to the four food security dimensions and interpreted through a food-systems lens, consistent with contemporary integrative review methodologies (Popay et al., 2020).

Quality Appraisal and Interpretive Rigor

To enhance credibility and analytical robustness, the methodological quality of included studies was appraised using criteria appropriate to mixed evidence bases. Established tools such as the Mixed Methods Appraisal Tool, the Critical Appraisal Skills Programme checklists, and Joanna Briggs Institute guidance were consulted as reference frameworks. Quality appraisal was used to contextualize findings and inform interpretation rather than as a basis for exclusion, recognizing the value of diverse forms of empirical evidence in food systems research (Hong et al., 2018). Limitations related to study design, data quality, or reporting transparency were explicitly considered during synthesis to avoid overgeneralization.

Methodological Transparency and Limitations

Although a formal meta-analysis was not feasible, the systematic search strategy, transparent screening process, structured data extraction, and theory-informed narrative synthesis provide a robust foundation for analytical integration. Potential limitations include publication bias and language bias arising from the inclusion of English-language studies only. However, triangulation across qualitative, quantitative, and mixed-methods evidence enhances the validity and trustworthiness of the findings. The methodological approach adopted in this study aligns with internationally accepted standards for systematic reviews in complex and interdisciplinary research domains (Tricco et al., 2021).

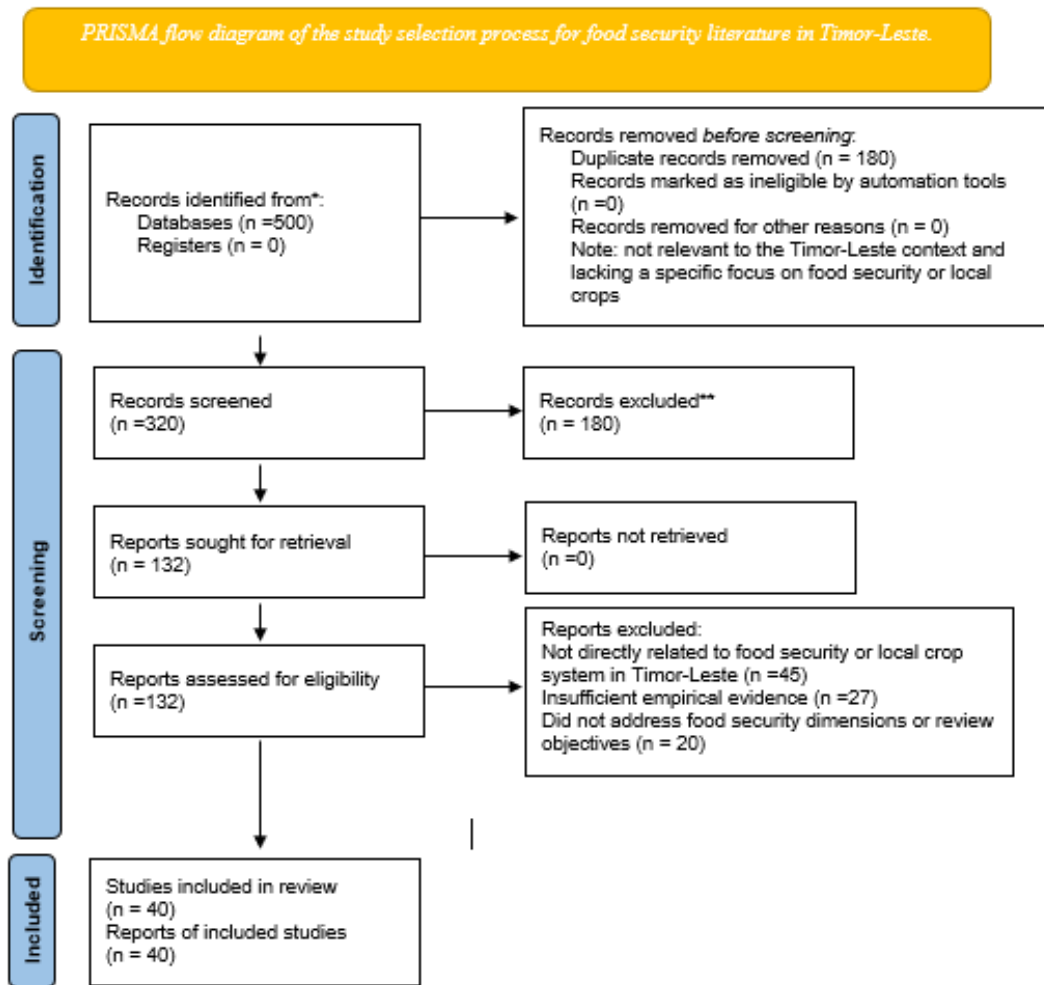


Figure 1. PRISMA Flow Diagram of Study Selection

RESEARCH RESULTS

Food Security Conditions and Trends in Timor-Leste

The synthesized evidence consistently portrays food insecurity in Timor-Leste as a chronic, seasonal, and structurally embedded condition within rural livelihood systems. Across the reviewed studies, food insecurity is most severe among households reliant on rain-fed subsistence agriculture, where vulnerability is intensified by rainfall variability, limited access to agricultural inputs, and geographical isolation. A dominant and recurring pattern is the seasonal food gap occurring during the pre-harvest period, when household food stocks are depleted and reliance on short-term coping strategies becomes unavoidable. This seasonal dimension emerges as a defining feature of food insecurity rather than an episodic anomaly.

Importantly, the reviewed evidence demonstrates that food insecurity in Timor-Leste cannot be adequately explained by national food supply deficits alone. Several studies document situations in which aggregate food availability increased through domestic production gains or food imports, yet household-level food insecurity persisted. These findings indicate that food insecurity is shaped by interacting structural constraints across multiple food security dimensions, including limited physical and economic access to food, substantial

post-harvest losses, inadequate storage infrastructure, and weak market integration, particularly in remote rural areas. As a result, improvements at the macro level do not consistently translate into improved food security outcomes at the household level.

A further trend identified in the literature is the growing dependence on imported staples, most notably rice. While imports contribute to short-term availability at the national level, they simultaneously increase household exposure to external price volatility and supply disruptions. This dependence has contributed to a fragile food security landscape in which household resilience remains limited despite policy efforts aimed at stabilizing national food supplies. Overall, the evidence depicts food insecurity in Timor-Leste as a systemic condition produced by the interaction of seasonal production dynamics, post-harvest inefficiencies, market structures, and infrastructural constraints rather than by insufficient production alone.

Role of Local Crops in Supporting Household Food Security

Across the reviewed studies, local crops consistently emerge as the cornerstone of household food security in Timor-Leste. Maize is uniformly identified as the dominant staple crop, providing the primary source of dietary energy for rural households and functioning as a strategic food reserve when supported by traditional storage practices. Locally adapted maize varieties, combined with household-level storage systems, play a critical role in stabilizing food availability across seasons, particularly during periods of limited market access.

Root and tuber crops, legumes, and wild foods serve a complementary but essential buffering function within household food systems. These crops are most frequently relied upon during periods when maize stocks are exhausted, enabling households to bridge seasonal food gaps and reduce dependence on market purchases. The reviewed evidence indicates that these crops substantially mitigate the severity of food shortages and enhance household coping capacity during the lean season. In addition, local crops contribute to dietary diversity and nutritional resilience, although this potential is not fully realized due to shifting consumption preferences, limited nutrition awareness, and increasing reliance on imported foods.

Beyond their nutritional and caloric roles, local crops are deeply embedded within social and cultural systems that shape food access and coping strategies. Practices such as reciprocal labor exchange, food sharing, and culturally embedded consumption norms strengthen community-level resilience and function as informal safety nets during periods of scarcity. Collectively, these findings position local crops not merely as agronomic inputs, but as systemic assets that simultaneously support food availability, access, utilization, and social resilience within household food systems.

Factors Influencing the Sustainability of Local Crop Production and Consumption

The sustainability of local crop systems in Timor-Leste is shaped by the interaction of agroecological, socio-institutional, economic, and behavioral factors. From an agroecological perspective, local crops demonstrate strong adaptability to drought-prone environments, marginal soils, and climatic variability, particularly when integrated within diversified cropping systems and basic soil conservation practices. However, the evidence clearly indicates that agroecological suitability alone is insufficient to ensure sustained contributions to household food security.

Socio-institutional factors emerge as decisive determinants of sustainability. Adoption and continuity of local crop production are strongly influenced by social capital, community leadership, and farmer participation in decision-making processes. Community-based seed systems and participatory innovation pathways are consistently associated with higher adoption rates, greater varietal diversity, and longer-term continuity compared to externally driven interventions. These mechanisms enhance local ownership and strengthen the alignment between production practices and household needs.

Economic and market-related constraints further limit sustainability. Weak market integration, inadequate post-harvest infrastructure, and limited price incentives reduce farmers' motivation to expand or diversify local crop production beyond subsistence needs. On the consumption side, increasing preferences for imported foods and declining cultural valuation of local crops undermine utilization, even where physical availability remains adequate. The evidence suggests that sustainability depends on coordinated interventions that simultaneously address production, post-harvest management, market access, and consumption practices rather than isolated technical solutions.

Policy Gaps and Future Research Directions

The reviewed literature identifies persistent policy gaps that constrain the effective integration of local crops into national and household food security strategies. Food and agriculture policies are frequently fragmented, with limited coordination across production support, post-harvest management, nutrition promotion, and market development. Many interventions prioritize increasing production or stabilizing food imports without parallel investments in storage systems, local value chains, or demand-side measures that encourage sustained utilization of local crops.

From a research perspective, the evidence base remains dominated by short-term and sector-specific studies that focus on individual crops, technologies, or interventions. There is a notable absence of integrative and longitudinal research examining how local crop systems influence food security outcomes across seasons and over time. Future research would benefit from adopting food-systems frameworks that explicitly link production, consumption, institutions, and policy implementation, as well as from greater attention to household decision-making processes and nutrition outcomes. Addressing these gaps is essential for informing more coherent, locally grounded, and resilient food security strategies in Timor-Leste.

DISCUSSION

The findings of this PRISMA-guided systematic review further substantiate the understanding of food insecurity in Timor-Leste as a structural and systemic condition rather than a short-term imbalance between food supply and demand. Synthesizing evidence from 40 empirical studies, the persistence of seasonal food insecurity despite production-centered interventions exposes the conceptual limitations of approaches that privilege availability over other dimensions of food security. Contemporary food systems scholarship increasingly emphasizes that food access, utilization, and stability are co-determinant factors shaping household outcomes, particularly in contexts characterized by remoteness, institutional fragility, and infrastructural deficits (Ericksen et al., 2021). The results are consistent with systemic interpretations that frame food insecurity as an emergent property of interacting environmental, economic, and governance constraints rather than isolated production failures (López-Ridaura et al., 2021; Mayring et al., 2022). In this respect, Timor-Leste reflects broader patterns observed in smallholder-based agrarian systems across the Global South.

The prominence of seasonal production gaps identified in the Results section aligns closely with climate-sensitive livelihood theory and contemporary resilience frameworks. Rain-fed subsistence agriculture remains inherently vulnerable to rainfall variability, and without effective buffering mechanisms, seasonal stressors directly translate into household food insecurity. Recent comparative studies in tropical and island agrarian systems demonstrate that seasonality continues to be a dominant driver of hunger even where aggregate annual production appears adequate (Caretta et al., 2022; Conway et al., 2023). The reviewed evidence suggests that many interventions in Timor-Leste insufficiently address intra-annual food availability, particularly during pre-harvest periods when household stocks are depleted. This finding reinforces the need to incorporate temporal dynamics into food security analysis and policy design, moving beyond static annual production indicators.

The Results also confirm that local crops constitute the foundation of household food security through multiple and interrelated pathways. Within a food systems framework, maize functions as the principal caloric base, while tubers, legumes, and wild foods provide critical buffering capacity during periods of seasonal shortage and market disruption. These findings are consistent with recent agroecological research demonstrating that crop diversity and locally adapted species enhance system robustness under conditions of climatic and economic uncertainty (Kremen & Merenlender, 2021; Tittonell et al., 2023). Beyond their caloric contribution, diversified local crop systems support dietary diversity and nutritional adequacy, strengthening the utilization dimension of food security. Collectively, the evidence supports a strategic shift away from mono-cropping and import-dependent food policies toward diversified, locally grounded production systems.

A key contribution of this review lies in its articulation of the social and institutional mechanisms through which local crops shape food security outcomes. The Results demonstrate that food sharing practices, reciprocal labor arrangements, and community-based seed systems function as informal

governance structures that regulate access and stabilize consumption during periods of stress. These findings align with institutional and socio-ecological theories emphasizing social capital, collective action, and local governance as central pillars of resilience in smallholder food systems (Cleaver & Whaley, 2018; Sellberg et al., 2021). In Timor-Leste, where formal safety nets and market institutions remain limited, such social mechanisms effectively compensate for institutional gaps. This challenges technocratic narratives that conceptualize food insecurity primarily as a technical production problem and underscores the importance of agency, norms, and embedded social relations.

Despite the centrality of local crops, the review reveals a persistent mismatch between production-focused interventions and household-level food security outcomes. Many initiatives documented in the literature prioritize yield enhancement or varietal introduction without corresponding investments in post-harvest management, market integration, or consumption practices. Recent food systems transformation studies caution that such siloed interventions often fail because they neglect the structural determinants of access and utilization (Ruben et al., 2021; Steiner et al., 2022). The increasing reliance on imported staples observed in Timor-Leste further compounds vulnerability by exposing households to price volatility and external supply shocks. These dynamics help explain why gains in agricultural production have not consistently translated into sustained food security improvements.

From both theoretical and practical perspectives, this review advances food systems scholarship by reframing local crops as socio-ecological assets rather than residual elements of subsistence agriculture. The synthesis demonstrates that the sustainability of local crop contributions depends on agroecological suitability, community-based seed governance, social capital, post-harvest practices, and policy coherence across agriculture, nutrition, and markets. At the same time, the review acknowledges limitations within the existing evidence base, particularly the dominance of short-term studies and the scarcity of longitudinal household-level analyses. Future research should adopt integrated food systems frameworks that explicitly link production, institutions, consumption, and policy implementation over time. Such approaches are essential for informing context-sensitive interventions capable of strengthening household resilience and advancing sustainable food security in Timor-Leste.

CONCLUSIONS AND RECOMMENDATIONS

Drawing on the synthesis of evidence from this PRISMA-guided systematic literature review, food insecurity in Timor-Leste is confirmed as a persistent, structural, and multidimensional challenge shaped by seasonal production gaps, post-harvest losses, weak market integration, and increasing reliance on imported staples rather than by national food supply deficits alone. The persistence of vulnerability among rural households indicates that production-oriented and import-dependent approaches are insufficient to address the systemic drivers embedded within local food systems. The reviewed evidence demonstrates that local crops particularly maize, tubers, legumes, and wild foods constitute the foundation of household food security, functioning as socio-ecological assets that

stabilize seasonal availability, buffer food shortages, enhance access through social and institutional mechanisms, and support utilization through dietary diversity and nutritional resilience. The sustainability of these contributions depends on the alignment of agroecological suitability with community-based seed systems, social capital, effective post-harvest management, and coherent policies across agriculture, nutrition, and market domains. Repositioning local crops within integrated, locally grounded food-systems strategies is therefore essential for strengthening household resilience and advancing more effective and context-sensitive food security interventions in Timor-Leste.

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