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Central and South Eastern Europe

AGRICULTURAL UNIVERSITY OF TIRANA

16th CASEE Conference

Next Stop Europe

Shaping the Future of Agriculture and Life Sciences Education

CONFERENCE PROCEEDINGS

11–13 May 2026 | Tirana, Albania
Agricultural University of Tirana • CASEE



Proceedings of the 16th CASEE Conference “Next Stop Europe: Shaping the Future of Agriculture and Life Sciences Education”

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About this volume

The 16th CASEE Conference convened researchers, doctoral students, educators and policymakers in Tirana on 11–13 May 2026 under the theme “Next Stop Europe: Shaping the Future of Agriculture and Life Sciences Education.” Hosted by the Agricultural University of Tirana, it examined how research and higher education can support agriculture, food systems and environmental stewardship as Albania and other countries in the region align with European standards.

This proceedings draft brings together the contributed texts in the order supplied, retaining source formatting where possible. The first group covers agricultural and life sciences; the later section, introduced by its own divider, is Agricultural Economics. The conference programme also included policy discussions, the UBT2030 reform showcase, oral and poster sessions, and a field visit to Berat.

Conference and publication details

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Conference Programme

Monday 11 May | Palace of Congresses, Tirana

The opening programme brought together institutional leaders and partners. A policy session, “From Policy to Practice,” addressed Albania’s path toward the European Union in agriculture and the environment, including sector reform, water management, fisheries and the role of higher education.

Tuesday 12 May | Agricultural University of Tirana

The morning showcased the UBT2030 strategy project and developments in education and research. The afternoon programme included parallel sessions in Agricultural and Life Sciences and Rural Development, Policy and Innovation, followed by poster presentations.

Wednesday 13 May | Berat

The field visit connected the conference discussions with horticulture, vineyards, farming practice and the cultural landscape of the Berat region.

Scientific Scope

The conference call identified nine broad areas: sustainable agriculture and natural resources; crop science and horticulture; animal science and veterinary systems; food science, safety and nutrition; biotechnology and life sciences; environment and climate change; rural development and agri-food systems; policy, governance and EU integration; and digitalization and innovation in agriculture.

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Developing A Digital-Ready Framework For Food Labeling Surveillance In Albania: A Sequential Exploratory Mixed Methods Approach

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Abstract
The alignment of national food safety protocols with the European Union legislation, specifically regarding Negotiation Chapter 12, remains a critical milestone for Albania's accession. While legislative transposition has progressed significantly, an implementation gap exists between statutory requirements and market enforcement. The purpose of this study was to develop a localized Compliance Assessment Tool (CAT) for the systematic auditing of food labeling. Utilizing a sequential exploratory mixed methods design, qualitative requirements from national regulatory standards were quantitized into a tri-level scoring matrix (0, 0.5, 1). This tool was pilot-tested on two imported dairy matrices representing different labeling strategies: a glued translation sticker (Sample A) and an integrated multi-language label (Sample B). The audit revealed critical safety non-conformities, including a 2°C storage temperature discrepancy and missing physical operator addresses. Furthermore, semantic non-compliance in date marking was identified across both samples. This research demonstrates that a weighted, digital-ready framework provides a scalable model for improving institutional transparency and risk-based surveillance in EU candidate markets.

Keywords: Mixed Methods, Food Labeling, Regulatory Standards, Market Surveillance, Consumer Protection, Food Safety

1. Introduction
Albania's progress through the European Union accession process necessitates a rigorous implementation of standards defined in Negotiation Chapter 12 which covers food safety, veterinary, and phytosanitary policy [4]. National primary law on food [1] and the associated national statutory standards for food information [2], is largely aligned with the overarching principles of European food law [7]. However, European Commission progress reports consistently highlight a persistent deficit in the practical enforcement of these laws within the local market [4].
The Albanian market relies heavily on imported food products, which often utilize secondary glued sticker labels for national language translation. This manual process introduces a high risk of information asymmetry and human error, particularly regarding safety-critical parameters. Previous studies in the Western Balkans have indicated that consumer perception of food safety is often at odds with the technical reality of market products [6]. Current inspection protocols in Albania often rely on qualitative assessments that lack the empirical rigor required for modern consumer protection [5]. There is an urgent need for a diagnostic instrument capable of translating legislative text into measurable compliance metrics. The objective of this study was to develop and validate a localized Compliance Assessment Tool (CAT) that serves as a methodological bridge between legal requirements and practical market surveillance.

2. Material and Methods

The research utilized a Sequential Exploratory Mixed Methods design [3]. This design allowed for the exploration of qualitative legal requirements before transforming them into a quantitative scoring instrument.

Phase 1: Qualitative Content Analysis

A comprehensive audit of national statutory requirements [2] was conducted to identify mandatory labeling elements. These elements were categorized by their impact on consumer safety and institutional traceability as shown in Table 1. Safety-critical parameters, such as allergen highlighting and storage temperatures, were prioritized in the subsequent weighting process.

Table 1. Relationship between Mandatory Requirements by National Regulatory Standards and Risk Weight (w)

Category	Mandatory Requirement (Weighted Items)	Weight (w)	Rationale
Public Health and Safety	Allergens, Date Marking, Storage Conditions	**5**	Direct impact on microbiological stability and consumer health (anaphylaxis, foodborne illness).
Supply Chain Traceability	Operator Address, Country of Origin	**3**	Essential for legal accountability, product recalls, and backwards traceability in the supply chain.
Economic and Consumer Info	Product Name, Ingredients, Nutrition Declaration, Net Quantity	**1**	Statutory requirements that provide context but do not pose immediate health risks if minor errors occur.

Phase 2*:* Quantitizing and Compliance Assessment Tool Development (CAT*)*

The qualitative requirements were transformed into a tri-level empirical scoring scale (x): Score 1.0 (Full Compliance) with strict adherence to statutory terminology and formatting; Score 0.5 (Partial/Semantic Non-compliance) when the information is present but uses synonyms or minor technical errors that do not immediately compromise safety; Score 0.0 (Non-compliance) for complete omission of data or provision of inaccurate safety information. A Weighted Compliance Score (WCS) formula was established to prioritize high-risk factors, aligning with single-layer scoring methodologies used in international risk-based surveillance frameworks [8].

$$\boldsymbol{WCS} = \left(\frac{\sum(x \times w)}{\sum w}\right) \times \mathbf{100}\%$$

Where x is the tri-level score and w is a risk-weight (1–5) assigned to each parameter based on public health impact. Table 2 defines the hierarchical tier classification system used to translate numerical Weighted Compliance Scores (WCS) into actionable risk levels.

Table 2. Relationship between Weighted Compliance Score (WCS) ranges and Label Risk Level Tiers.

WCS Range	Compliance Tier	Risk Level	Enforcement Strategy
90% – 100%	**1** High Compliance	**Low**	Standard surveillance.
60% – 89%	**2** Moderate Compliance	**Moderate**	Mandatory labeling correction within 30 days; follow-up desk audit.
< 60%	**3** Low Compliance	**Critical**	Immediate physical inspection; potential seizure; laboratory verification required.

Phase 3: Pilot Case Audit

To validate the CAT instrument, a pilot study was conducted using purposive sampling of two imported dairy matrices (Kefir). These samples were strategically selected from a local retail store's refrigerated section to represent the two most prevalent labeling strategies in the Albanian market: a secondary glued translation sticker (Sample A) and a factory-integrated multi-language label (Sample B). The selection was intended as a representative proof-of-concept to evaluate the tool's sensitivity in detecting information discrepancies between original manufacturer data and local translations under real-world market conditions.

3. Results and Discussion

The pilot audit identified critical implementation gaps across both samples, demonstrating the empirical utility of the CAT framework. The quantitative findings are summarized in Table 3.

Table 3. Comparative Compliance Matrix for Sample A (Glued) and Sample B (Integrated).

Mandatory Requirement	Risk-Weight	Sample A (Glued)	Sample B (Integrated)	Analysis
Name of the food	1	1.0	1.0	Both compliant.
List of ingredients	1	1.0	1.0	Both compliant.
Allergenic ingredients	5	1.0	1.0	Both compliant.
Net quantity	1	1.0	1.0	Both clear.
Date marking	5	0.5	0.5	Non-conformity (Both).
Storage conditions	5	0.0	1.0	Safety Critical (A).
Operator address	3	0.5	1.0	Technical Error (A).
Country of origin	3	1.0	1.0	Both clear.
Nutrition declaration	1	1.0	1.0	Both compliant.

3.1. Technical and Safety Non-conformities

A significant safety-critical discrepancy was found in Sample A regarding thermal requirements. While the original manufacturer label specified a range of 2ºC to 6ºC, the translated glued label listed 2ºC to 8ºC. This upward variance represents a direct failure of national food information standards **Invalid source specified.**, as it potentially compromises the microbiological stability of the dairy matrix. Sample A also failed traceability protocols by providing only an electronic mail address rather than a mandatory physical business address. Regarding date marking, both samples exhibited semantic non-compliance by failing to utilize the precise statutory terminology required for perishable products. Under the national standards, such items must be labeled with the specific safety imperative *Të përdoret deri më or Të përdoret përpara* (Use by). Instead, Sample A utilized the non-standard phrase *Të konsumohet brenda datës* (To be consumed within), while Sample B utilized *Data e skadencës* (Expiration date) along with the abbreviation EXP. These findings were assigned a score of 0.5, as the intent was clear but the legislative precision necessary for European integration was lacking. Using the WCS formula, Sample A achieved a score of 64.0%, classifying it as Tier 2 (Moderate Compliance), while Sample B scored 90.0%, placing it in Tier 1 (High Compliance). This prioritization allows regulatory bodies to focus resources on Sample A for immediate cold-chain verification.

3.2. Discussion on Institutional Transparency

The research highlights that manual translation processes are primary drivers of safety-critical errors. The CAT tool proves that information asymmetry persists even when a product appears compliant. By quantitizing these errors, the study provides the logical architecture for a mobile surveillance application. Such a platform would allow inspectors to cross-reference manufacturer data with local labels in real-time, effectively closing the implementation gap and aligning national inspections with the high standards of the European Single Market.

References

[1] Albanian Parliament: Law No. 9863, dated 28.01.2008 On Food, as amended; 2008.
[2] Council of Ministers, Government of Albania: VKM No. 434, dated 11.7.2018 On the Provision of Food Information to Consumers; 2018.
[3] Creswell JW, Creswell JD: Research Design: Qualitative, Quantitative, and Mixed Methods Approaches: SAGE Publications; 2023.
[4] European Commission: Albania 2025 Report: European Commission; 2025.
[5] European Court of Auditors: Special Report 23/2024: Food Labelling and Consumer Protection in the EU: Publications Office of the European Union; 2024.
[6] Kapaj AM, Mani S: Food safety and consumer perception in the Western Balkans: The case of Albania. Journal of Agriculture and Rural Development 2022, 12(1): 45-58.
[7] Schebesta H, Purnhagen K: EU Food Law: Oxford University Press; 2024.
[8] Ze Y, Van Asselt ED, Focker M, Van der Fels-Klerx HJ: A Comparative Analysis of Risk-Based Food Safety Inspection Methods Across EU Countries and Canada, Journal of food science 2025, 90(10): e70592.

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