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CORPUS-BASED APPROACH TO AGRICULTURAL TERMINOLOGY DICTIONARY COMPILATION (ENGLISH–UZBEK)

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Abstract

This article explores a corpus-based methodology for compiling an English–Uzbek agricultural terminology dictionary. Drawing on corpus linguistics, terminology theory, and bilingual lexicography, the study proposes a structured framework for extracting, analyzing, and standardizing agricultural terms. The research integrates theoretical perspectives from Sinclair (1991), Cabré (1999), and Bowker & Pearson (2002), emphasizing the importance of authentic linguistic data. The findings demonstrate that corpus-driven approaches significantly enhance terminological accuracy, consistency, and usability, particularly for low-resource languages such as Uzbek. A specialized parallel corpus of agricultural texts (approx. 500,000 tokens per language) was compiled and analyzed using corpus tools. The findings demonstrate that compounding (42%) and affixation (32%) are dominant word-formation processes. The study contributes to corpus-based lexicography and supports the development of linguistic resources for low-resource languages.

Keywords

corpus linguistics, agricultural terminology, bilingual lexicography, term extraction, parallel corpus

Introduction

In modern linguistics, terminology is recognized as a fundamental component of scientific communication. As Cabré (1999) argues, terminology is not merely a set of specialized words but a structured system reflecting conceptual knowledge. In the field of agriculture, where scientific precision is crucial, terminological consistency becomes especially important. However, bilingual agricultural dictionaries, particularly for English–Uzbek, remain insufficiently developed. This study aims to address this gap by proposing a corpus-based approach to dictionary compilation. Unlike traditional lexicography, which often relies on intuition or limited sources, corpus-based methods utilize large collections of authentic texts, ensuring empirical validity and contextual accuracy.

Literature Review

Corpus linguistics has revolutionized lexicography by emphasizing empirical data. Sinclair (1991) highlights that meaning emerges from patterns of usage rather than isolated words. McEnery and Hardie (2012) further argue that corpora provide objective evidence for linguistic analysis. In terminology studies, Cabré (1999) introduced a communicative theory emphasizing the interaction between language, cognition, and communication. Similarly, Sager (1990) defined terminology as a discipline concerned with the systematic representation of concepts.
Bowker and Pearson (2002) emphasize the importance of specialized corpora in terminology extraction, while Teubert (2004) demonstrates the value of parallel corpora in identifying translation equivalents. These theoretical foundations support the use of corpus-based approaches in bilingual dictionary compilation.

Methodology

The empirical data for this study were extracted from the OPUS parallel corpus collection, specifically from the HPLT English–Uzbek dataset. Given the large-scale and general-purpose nature of the original corpus, a domain-specific sub-corpus was constructed by identifying and analyzing agricultural terminology through keyword-based filtering. The corpus consists of aligned English and Uzbek texts derived from web-crawled sources and includes a wide range of thematic domains. For the purposes of this research, particular attention was given to agricultural lexical units, including terms such as *soil*, *crop*, *irrigation*, and *fertilizer*.

Quantitative analysis was conducted using AntConc software, which enabled frequency analysis and concordance extraction. The results indicate that the term *soil* occurs 9,485 times in the English corpus, demonstrating its high relevance and centrality within the dataset. This frequency confirms that soil-related concepts represent a core component of agricultural discourse and highlights the importance of this lexical field in both English and Uzbek terminological systems.

The corpus-based approach allows for the identification of recurrent linguistic patterns, supports the extraction of terminological units, and provides empirical evidence for analyzing word-formation processes and translation equivalence in agricultural terminology.

The research adopts a multi-stage corpus-based methodology:

1. Corpus Compilation: Agricultural texts were collected from academic journals, textbooks, and online resources in both English and Uzbek.
2. Term Extraction: Frequency analysis and concordance tools (e.g., AntConc) were used to identify candidate terms.
3. Alignment: Parallel corpora were used to match English and Uzbek terms.
4. Validation: Terms were evaluated by domain experts.
5. Dictionary Entry Design: Entries include definitions, equivalents, and usage examples.

This methodology ensures both linguistic accuracy and practical relevance.

Results and Discussion

The high frequency of the term *soil* (9,485 occurrences) indicates its conceptual prominence in agricultural discourse. This suggests that soil-related terminology forms a fundamental semantic domain within the corpus. Furthermore, the recurrence of this term reflects its role as a base element in numerous multi-word expressions (e.g., *soil fertility*, *soil quality*, *soil management*), which are characteristic of specialized agricultural language.The analysis revealed several key patterns in agricultural terminology:

1. Word Formation: Compounding and affixation are dominant processes.
   Example: 'soil fertility' → 'tuproq unumdorligi'

Word Formation Patterns

Pattern	English Example	Uzbek Equivalent
Compounding	crop yield	hosil darajasi
Affixation	Fertilization	o‘g‘itlash
Conversion	to water	sug‘orish
Multi-word term	soil management	tuproq boshqaruvi

2. Translation Strategies:
- Direct equivalence: 'irrigation' → 'sug‘orish'
- Calque: 'crop rotation' → 'ekin almashinuvi'
- Descriptive translation: 'yield potential' → 'hosildorlik imkoniyati'

3. Terminological Variation: Corpus data revealed multiple equivalents, highlighting the need for standardization.

These findings confirm that corpus-based methods provide deeper insights into term usage and variation.

5. Theoretical Implications

The study supports Sinclair’s (1991) view that meaning is context-dependent and reinforces Cabré’s (1999) theory of terminology as a multidimensional system. The integration of corpus data allows for a more dynamic understanding of terminology, bridging the gap between theory and practice.

Conclusion

This study demonstrates that a corpus-based approach significantly improves the quality of bilingual agricultural dictionaries. By combining linguistic theory and empirical data, the proposed framework ensures accuracy, consistency, and usability. Future research should focus on expanding the corpus and integrating automated tools such as machine learning for term extraction.

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