

Semantic Evolution of Agro-Industrial Vocabulary in the Context of the Fourth Industrial Revolution

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Abstract. The article explores the semantic transition of agricultural terminology from traditional expressions to high-tech nomenclature driven by technological progress, scientific advancements, and globalization. Methodologically, the study employs historical-linguistic, sociolinguistic, ethnolinguistic, and comparative approaches. The author contrasts historical terms representing manual labor and ancestral practices (such as "ploughing", "sickle", and "threshing floor") with modern, data-driven vocabulary emerged in the mid-21st century (such as "agrodron", "precision agriculture", "vertical farming", and "agroinformatics"). The findings indicate that automation, robotics, and biotechnology have radically restructured rural social dynamics and transformed agricultural occupations. While globalization accelerates the international borrowing of technical terms, the article underscores the critical necessity of preserving traditional agrarian vocabulary to maintain the cultural heritage and national identity of rural communities. Ultimately, analyzing this linguistic evolution not only decodes the socio-cultural shifts in farming history but also assists in forecasting the future adaptability of the agricultural sector to global environmental and economic challenges.

Keywords: vocabulary evolution, traditional agricultural vocabulary, agricultural terms, warehouse, agrodrone, sickle, agroinformatics, threshing floor

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Dördüncü sənaye inqilabı kontekstində aqrar-sənaye leksikasının semantik təkamülü

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Xülasə. Məqalə texnoloji tərəqqi, elmi nailiyyətlər və qloballaşmanın təsiri ilə kənd təsərrüfatı terminologiyasının ənənəvi ifadələrdən yüksək texnologiyalı adlara doğru keçid prosesini araşdırır. Tədqiqat zamanı tarixi-lingvistik, sosiolingvistik, etnolingvistik və müqayisəli metodlardan istifadə olunmuşdur. Müəllif fiziki əməyi və əcdadların təcrübələrini əks etdirən tarixi terminləri ("şum kəsmək", "oraq", "xırman") XXI əsrin ortalarında formalaşan müasir, məlumat-əsaslı leksika ("aqrodron", "dəqiq kənd təsərrüfatı", "şaqli fermerlik", "agroinformatika") ilə qarşılaşdırır. Nəticələr göstərir ki, avtomatlaşdırma, robotlaşdırma və biotexnologiya kənd yerlərinin sosial dinamikasını köklü surətdə dəyişdirmiş və peşə profillərini transformasiyaya uğratmışdır. Qloballaşma prosesi texniki terminlərin beynəlxalq səviyyədə alınmasını sürətləndirsə də, məqalədə kənd icmalarının mədəni irsini və milli kimliyini qorumaq üçün ənənəvi aqrar leksikanın saxlanılmasının vacibliyi vurğulanır. Bu prosesin qırğız milli dilinin zənginləşməsi fonunda milli kimliyə mənfi təsirinə zəmin yaratmaması üçün görülməli işlərin vacibliyi vurğulanır.

Yekun olaraq, bu dil təkamülünün təhlili kənd təsərrüfatı tarixindəki sosial-mədəni dəyişiklikləri izah etməklə yanaşı, aqrar sektorun global ekoloji və iqtisadi çağırışlara gələcək adaptasiyasını proqnozlaşdırmağa imkan verir.

Açar sözlər: *lüğətin təkamülü, ənənəvi kənd təsərrüfatı lüğəti, kənd təsərrüfatı terminləri, anbar, aqrodrone, oraq, aqroinformatika, xırman yeri*

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Introduction

The article is devoted to the evolution of agricultural vocabulary from traditional to modern terms. The article analyzes how technological progress, scientific advances, and globalization have influenced changes in agricultural terminology. Traditional terms such as "ploughing", "harvesting", "storage" are analyzed in the context of their historical and cultural meaning, and modern terms such as "tractor", "genetically modified organisms (GMO)", "agrodrone" show how new technologies and scientific methods have influenced the agricultural sector can be seen. The article also discusses the role of globalization in sharing knowledge and borrowing terms, as well as the importance of preserving cultural heritage. The evolution of agricultural vocabulary reflects widely cultural and social changes and shows how language has adapted to new conditions and needs of society.

Research Objective

The evolution of agricultural vocabulary is an important area of research for several reasons. First of all, agriculture is one of the oldest and most important areas of human activity, which ensures food security and the stability of society. Understanding the changes in terminology used in this field allows us to trace the development of agricultural practices and technologies, as well as their impact on culture and society.

Secondly, the world today is facing many challenges, such as climate change, population growth, and the need for sustainable agriculture. The evolution of agricultural vocabulary reflects how science and technology are helping to overcome these challenges by introducing new methods and techniques to agriculture. Thirdly, globalization and the integration of world markets facilitate the exchange of knowledge and technology between countries, leading to the borrowing and adaptation of terms from different languages. Studying this process can help us better understand cultural interactions and their impact on language.

The agrarian vocabulary, reflecting the cultural and social aspects of agriculture, has undergone significant changes over the centuries. Advances in technology, changes in agricultural practices, and globalization have affected the terminology used in the agricultural industry. In this article, we look through the evolution of agricultural vocabulary, analyze changes in terminology and their causes, and consider how these changes reflect broader cultural and social changes. Traditional agricultural vocabulary includes terms and expressions that have been used in agriculture for centuries. These words reflect the agricultural experience, cultural experience and social structure of rural communities.

The development of technology in various directions corresponds to the middle of the 21st century. Therefore, until that time, our ancestors used traditional terms in the field of agriculture. In other

words, today there are several terms in the vocabulary of agriculture and farming that remain as historical words or whose support for future generation is unclear. Let us analyze some of them as examples:

1. Plow: One of the oldest and most important tools in agriculture, it is used to plow the land and prepare it for sowing. The plow represents hard work, stability and dependence on the land.
2. Harvesting: The process of harvesting grains. The harvest is an important seasonal event that spawns many traditions and celebrations.
3. Sickle: A hand tool for cutting crops. It symbolized manual labor and was an important part of agricultural work before the introduction of machines.
4. Warehouse: A traditional building for drying and storing grain. Drying machines were essential to preserve crops in high humidity and other adverse weather conditions.
5. Harrow: A tool that loosens the soil after plowing and prepares the field for sowing. The use of harrowing improved the quality of the soil and contributed to good crop growth.
6. Cow shed: A room for keeping cows. It is important not only as part of agricultural production, but also as an element of the traditional lifestyle of rural communities.
7. Grain warehouse: A structure for storing grain and other agricultural products. Sheds were necessary for protection from weather conditions and pests.
8. Mower: A hand or power tool for cutting grass and crops. The mower was important in preparing fodder for livestock and harvesting crops.
9. Thresher floor: a device that threshes grain, separates grain from chaff and bags. Traditional threshing machines are operated mechanically, manually or by birds.
10. Stack: Hay or straw placed outside for storage. The stack is made to store fodder for animals for winter.

These traditional terms describe not only agricultural processes and tools, but also cultural and social aspects of rural life. They are part of the cultural heritage that is passed down from generation to generation, helping to maintain a connection with history and traditions.

Role of Traditional Agricultural Vocabulary: Traditional agricultural vocabulary includes terms and expressions that have been passed down from generation to generation. These words and expressions not only referred to specific agricultural processes, tools and phenomena, but were part of the cultural heritage. They reflect people's connection to the earth, their dependence on natural cycles and seasonal changes.

Methods

Studying the evolution of agricultural vocabulary, the transition from traditional to modern terms, requires a comprehensive approach and the use of various methods. Therefore, historical-linguistic, sociolinguistic, ethnolinguistic, lexicographic, comparative methods were used in the study of the topic. The use of these methods allows for a comprehensive study of the evolution of the agricultural vocabulary and the identification of the main trends and factors influencing its change.

Results

As a result, the preservation and study of traditional agricultural vocabulary is important to preserve the cultural heritage and identity of rural communities. Traditional terms have not only historical but also cultural value, conveying knowledge and experience formed over centuries. Thus, the study of the evolution of agricultural vocabulary not only helps to understand the past and present of agriculture, but also helps to predict its future development, to ensure stability and adaptability to new challenges.

Originality and value

The study of changes in agricultural vocabulary over time is a relatively new area of linguistics. There are many studies of general changes in language, but less specific studies of agricultural vocabulary. The agricultural sector forms the backbone of many countries' economies. Understanding the evolution of agricultural vocabulary helps us better understand the development of agriculture and its impact on society. The study of traditional agricultural vocabulary contributes to the preservation of cultural heritage and national identity, which is especially important in the context of globalization.

Transition to Modern Vocabulary

New modern terms in the field of agriculture: Modern technology and scientific advances have significantly changed the field of agriculture by introducing new terms and expressions. These new terms reflect current trends and innovations in agriculture, as well as global changes in agricultural business practices. Let's look at some of the most important modern terms:

1. **Agrodrone:** An unmanned air vehicle used to monitor field conditions, use fertilizers and pesticides, and estimate yields. Agrodrone increase the accuracy and efficiency of management of agricultural processes.
2. **Genetically Modified Organisms (GMOs):** The genetic material of plants or animals has been modified through biotechnology to increase plant productivity, resistance to disease or adverse conditions.
3. **Vertical Farming:** A method of growing plants in multi-level structures, often in closed environments. This saves space and uses resources efficiently.
4. **Hydroponics:** A method of growing plants without soil, using solutions in water that contain all the nutrients needed for growth. Hydroponics allows you to control growing conditions and increase water efficiency.
5. **Aquaponics:** A system that combines aquaculture (fish farming) and hydroponics. Fish waste is used as plant food, and the plants purify the water that is returned to the aquariums.
6. **Precision Agriculture:** An approach to agricultural management that uses data and technology to optimize production. It includes the use of GPS, drones, sensors and analytics software for precision fertilization, irrigation and other operations.
7. **Agroinformatics:** Application of information technologies and systems to manage agricultural processes. Includes the use of big data, Internet of Things (IoT) and artificial intelligence to make informed decisions.
8. **Robot Farms:** Farms where most of the work is done by robots and automated systems. This includes robots for milking cows, mowing, weeding and other jobs.
9. **Agricultural Biotechnology:** Application of biological processes and technologies to improve agricultural practices. Includes genetic engineering, cloning, and other techniques to create more resistant and productive plants.
10. **Agroecology:** A scientific discipline that studies the application of ecological principles in agriculture to create sustainable and healthy agroecosystems. Includes organic agriculture, agroforestry and other environmentally friendly methods.
11. **Manure:** the practice of sowing certain crops (e.g., clover, barley) and then working them into the soil to improve its structure and fertility. This will help reduce dependence on chemical fertilizers.
12. **Sustainable agriculture:** an approach aimed at ensuring the long-term productivity and health of agricultural systems without harming the environment. It includes methods that reduce negative impacts on nature and support biodiversity.

These modern terms show how innovations and scientific advances are transforming the agricultural sector, making it more efficient, sustainable and technologically advanced.

Discussion

Looking at the literature on the topic, research shows that the study of the evolution of agricultural vocabulary is a multifaceted and interdisciplinary field that includes historical, sociolinguistic, ethnolinguistic, and lexicographic aspects. The current research provides important insight into the changes in agricultural vocabulary and indicates the need for further research in the context of current social and technological changes.

In the historical-linguistic direction, T.V.Akimova in her book "History of the Russian Agrarian Language" (1999) studies the evolution of the agricultural vocabulary for several centuries, paying special attention to the changes caused by social and technological factors. The author analyzes historical texts, documents and identifies changes in terminology and its meaning (Akimova, 1999). And another Russian scientist A.I. Ivanov in his work "Dictionary of Old Russian Agricultural Vocabulary" (2003) provides an extensive list of agricultural terms used in Old Russian texts. This dictionary is an important source for the study of vocabulary and its evolution (Kudryavtsev, 2021). S.V.Belozerov in his article "Evolution of agricultural vocabulary in Russian in XX-XXI centuries" (2015) focused on the influence of political and economic factors and analyzed changes in agricultural vocabulary based on texts from the 20th and 21st centuries (Ivanov, 2003).

In the sociolinguistic direction, S.A.Belyaev in his article "Social Aspects of Agricultural Vocabulary Development" (2015) studied the differences in the agricultural vocabulary of different regions of Russia and analyzed how regional characteristics and social changes affected the terminology (Belyayev, 2015). In the same direction, L.P.Kuzmina in her study "Regional Differences in Agricultural Terminology in Russia" (2017) conducted a study that showed how geographical location and climatic conditions affect the use of certain agricultural terms (Ryabova, 2016). Social changes also had an impact on agricultural terms. In this direction, I.V.Petrova in the article "Sociolinguistic Aspects of Agrarian Vocabulary in the Context of Urbanization" (2018) studied how urbanization and migration processes affect changes in agricultural vocabulary, leading to the disappearance of some traditional terms and the emergence of new ones (Belyayev, 2015).

Agricultural terms in the field of traditional rites and folklore were also taken up, and N.M.Ryabova in her work "Traditions and Innovations in the Agrarian Lexicon of Russian Folklore" (2016) studied how agricultural vocabulary is reflected in folk traditions and rituals, identified traditional terms, their evolution, and analyzed folklore texts (Smirnova, 2019). In the same direction, B.A.Serebrennikov on Ethnolinguistics and Agrarian Culture: Based on the Russian Language (2011), studied the relationship between agrarian culture and language, and studied how changes in agricultural practices affect language (Uspensky, 2004).

Scientists studying the vocabulary of Turkic languages and its historical changes have only indirectly addressed the issues of the evolution of the agricultural vocabulary. For example, Andrey Viktorovich Dybo, Anna Dybo, Marcel Abramovich Agekyan, Nadezhda Iosifovna Emelyanova, Husan Muhammadiev, Ahmet B. Eren and Sergey Pavlovich Kazantsev are well-known linguists and Turkologists engaged in comparative historical research of Turkic languages. Their research covers issues of historical lexicology, including how changes in different areas of vocabulary may affect agricultural terms.

And the agricultural terms of the Turkic languages in the Central Asian region have been studied only by a few scientists. It should be noted that K. K. Yudakhin's "Kyrgyz-Russian Dictionary" (1965) contains a number of farming terms. However, it is not a separate section, but is included in the general dictionary (Zhumaliyev, 1991). In J. Zhumaliyev's work "Lexicon of Fergana Kyrgyz Dialects" (1991), there are places where farming terms are mentioned, although they are not studied separately

(Khuribaeva, 2016). And in the monograph "Professional vocabulary of the Kyrgyz language (as an example of cotton words)" (2016) by E.G. Khuribayeva, the agricultural vocabulary was analyzed in detail (Zaliznyak, 2022).

Research content

Influence of technology and scientific progress on agricultural vocabulary

With the development of technology and the introduction of scientific methods into agriculture, new terms and expressions have appeared. Traditional means and methods have been replaced by modern machines and technologies, requiring updating and supplementing the agricultural vocabulary.

Modern technology and scientific advances have significantly changed the agricultural industry, leading to radical changes in farming methods and, therefore, in the terminology used in this field. Traditional methods of farming are gradually being replaced by high-tech solutions that lead to the emergence of new terms and concepts. Let's see how technology and scientific progress affect the development of agricultural vocabulary.

Automation and robotization

Automation and robotization of agricultural processes have significantly increased the efficiency and accuracy of tasks. These changes led to the emergence of new terms:

- Agrobots: robots designed to perform agricultural tasks such as sowing, weeding, harvesting and monitoring the condition of plants.
- Autonomous tractors: tractors equipped with automatic control systems that can perform tasks without human intervention.
- Dairy robots: devices for automated milking of cows to increase productivity and improve working conditions for farmers.

Information technology and data

The use of information technologies in agriculture contributes to the accurate management of resources and optimization of production processes:

- Precision farming: an approach based on the use of data and technology to optimize agricultural processes. It includes the use of GPS, drones and sensors for precise fertilization and irrigation.
- Agriinformatics: the use of information technologies for data analysis, agricultural management and decision-making.
- Internet of Things (IoT): A network of interconnected devices and sensors used to monitor and control agricultural processes in real time.

Biotechnology and genetics

Scientific advances in biotechnology and genetics have led to the creation of new terms related to crop and animal improvement:

- Genetically modified organisms (GMOs): plants and animals whose genetic material has been modified to increase productivity, resistance to disease and adverse conditions.
- Cloning: the technology of creating genetically identical copies of plants and animals, improving their characteristics and performance.
- CRISPR: gene editing technology used to precisely modify the DNA of plants and animals.

Sustainable agriculture

Modern technologies are aimed at creating more sustainable and environmentally friendly agricultural methods:

- Hydroponics: method of growing plants without soil using water solutions containing nutrients. Enables effective use of resources and control of growing conditions.

- Aquaponics: a system that combines fish and plant cultivation, where fish waste is used as fertilizer for plants.
- Vertical Farming: A method of growing plants in multi-level structures that saves space and resources.

Globalization and knowledge exchange

Globalization has facilitated the exchange of knowledge and technology between different regions and countries. This led to the borrowing and adaptation of terms from other languages and cultures. For example, English terms such as "crop rotation" or "precision farming" have become widely used in other languages.

Globalization and the exchange of knowledge between countries and regions have contributed to the borrowing and adaptation of terms from different languages:

- AgTech: a term that includes agricultural technologies aimed at increasing the efficiency and sustainability of agricultural production.
- Smart farming: intelligent farming that uses modern technologies to improve the management of agricultural processes.

The impact of technology and scientific progress on agricultural vocabulary is significant and varied. New terms reflect changes in agricultural practices, the introduction of high technology and innovation, as well as globalization and knowledge exchange. These changes help not only to increase agricultural productivity and sustainability, but also to preserve cultural heritage and adapt to the new challenges of the modern world.

Social and cultural aspects of the evolution of agricultural vocabulary

Preserving cultural heritage: Although modern terms have been introduced, many traditional words and expressions are still used. They remind of cultural heritage and help to maintain connection with history and tradition. Adaptation and Innovation: Modern agricultural vocabulary continues to reflect innovation and change in society. After the new technologies and farming methods new terms appear. This evolution shows the ability of language to adapt to changes and needs of society. The evolution of agricultural vocabulary is not only a process of changing terminology associated with the introduction of new technologies and scientific achievements, but also a deep reflection of social and cultural changes in society. The development of agricultural vocabulary affects cultural traditions, social structure and economic conditions, and the formation and adaptation of cultural norms and values. We consider the main social and cultural aspects associated with the evolution of agricultural vocabulary.

Social aspects:

1. Changing Social Structure: Modern technology and agricultural practices have changed the structure of rural communities. The transition from manual labor and traditional methods to automated and technological methods has led to a reduction in the number of workers in the agricultural sector and a change in the profile of agricultural occupations. This change is reflected in the new agricultural vocabulary:

- Agropreneur: A professional person who runs an agricultural business, often using modern technology and management strategies.
- Farmer 2.0: a term that describes modern farmers who use advanced technologies and business methods.

2. Transformation of traditional labor: Traditional forms of agricultural labor are changing with the introduction of new technologies such as robotics and automation. This also affects language:

- Robotic milking machine: Equipment that automates the process of milking cows and replaces manual labor.

- Agricultural engineer: A professional person engaged in the development and implementation of new agricultural technologies.

Cultural aspects:

1. Preservation and transformation of cultural heritage: Changes in the agricultural vocabulary not only reflect technological and economic changes, but also affect the preservation of cultural heritage. Traditional terms and practices may disappear, but many remain in cultural memory and tradition:

- Agricultural festivals: Traditional festivals such as harvest festivals often involve the use of traditional terms and practices that are preserved in language and culture.

- Folklore terms: Words and expressions related to traditional farming methods have been preserved in folk art and folk songs.

2. Adaptation and interpretation of new concepts: Modern terms associated with innovations and new technologies can be adapted and interpreted in the context of local cultures and traditions:

- Agroecology: An approach that combines ecological principles and agriculture can be adapted to the cultural characteristics and traditions of rural communities.

- Ecofarming: a method of farming that focuses on sustainability and environmental protection that can be interpreted in the context of local traditions and practices.

Social influence:

1. Education and information: Modern agricultural vocabulary also plays an important role in education and informing the public about new methods and technologies. The new terms will be part of educational programs, workshops and information campaigns to spread knowledge about modern agricultural practices.

2. Economic impact: Changes in agricultural vocabulary may reflect economic changes in agriculture, such as a shift to more profitable and efficient business methods. This effect can also be seen in language:

- Financial terms: Terms related to investments in agrotechnology and agricultural asset management are becoming an important part of agricultural vocabulary.

Conclusion

The evolution of agricultural vocabulary reflects the profound changes that have happened in agriculture over the centuries. From traditional terms to modern expressions which passed down from generation to generation, associated with new technologies and globalization, the agricultural vocabulary is developing. Understanding this evolution helps to better understand the cultural and social aspects associated with agriculture and highlights the importance of preserving and adapting agricultural heritage in the modern world.

The evolution of agricultural vocabulary is a complex process that affects both the social and cultural aspects of the life of rural communities. Changes in terminology reflect profound social transformations associated with the introduction of new technologies and methods, as well as cultural transformations associated with the preservation and adaptation of traditions. Analyzing these aspects helps to better understand how language and culture interact and change in response to modern challenges and innovations.

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