

PAPER

# THE ROLE OF NATURAL-GEOGRAPHICAL FACTORS IN THE FORMATION OF AGRICULTURAL CULTURE IN ANCIENT KHOREZM

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## Abstract

Ancient Khorezm, located in the lower reaches of the Amu Darya, developed a unique agricultural civilization shaped by its natural-geographical conditions. This study examines Khorezm's irrigated farming system, water management practices, and ecological harmony based on the "Avesta", Greco-Roman sources (Strabo, Hecataeus), and archaeological findings. Key focuses include the impact of the Amu Darya's shifting riverbeds, floods, and soil fertility on agricultural evolution.

**Key words:** Ancient Khorezm, agricultural culture, natural-geographic environment, Amu Darya, "Avesta," written sources, geological studies, archaeological studies.

## Introduction

The Khorezm Oasis, one of Central Asia's oldest and most significant cultural-historical regions, played a pivotal role in human civilization's development. Located in the lower reaches of the Amu Darya River, it thrived as an agricultural hub due to its favorable natural-geographical conditions, abundant water resources, and fertile soils. Sophisticated irrigation systems, centered around the Amu Darya and its tributaries, were crucial to the economic and social vitality of the region's inhabitants. These systems enabled advanced farming practices, shaping Khorezm's cultural and economic landscape. The formation, evolution, and eventual decline of these irrigation networks have been extensively studied through archaeological excavations, geological analyses, and historical research.

These studies reveal the intricate interplay of environmental, technological, and societal factors, including adaptive water management and crop cultivation techniques, that defined Khorezm's agrarian legacy. This enduring impact highlights Khorezm's role as a key center of innovation and cultural exchange in ancient Central Asian civilization.

## Literature Review

The study of the Khorezm Oasis's irrigation systems and agricultural culture relies on key scholarly works. S.P. Tolstov's *Ancient Khorezm* offers a comprehensive archaeological analysis of ancient irrigation systems and canals, detailing their location, structure, and functions. B.V. Andrianov's *Ancient Irrigation Systems of the Aral Sea Region* examines the gradual evolution of irrigated agriculture and the Amu Darya's shifting courses. Ya. Gulyamov's *The History of Irrigation in Khorezm* is a seminal local study, tracing the development of irrigation systems from antiquity to the modern era. These works collectively provide critical insights into the technological, environmental, and socio-economic factors shaping Khorezm's agrarian heritage, supported by extensive field research and historical data.

## Methodological Foundations

The study of ancient Khorezm Oasis's irrigation systems and agricultural culture employed a comprehensive, multidisciplinary scientific approach. It integrated archaeological excavations, aerial photography, satellite imagery, historical written source analysis, and geological and radiocarbon analyses. These methods were

harmoniously applied to thoroughly examine irrigation structures, historical riverbeds, ancient agricultural traditions, and natural-geographical factors.

This approach facilitated a scientifically grounded analysis of the agricultural culture's formation process in the Khorezm Oasis. By combining these diverse methodologies, the research elucidated the interplay between environmental conditions and human ingenuity, revealing how sophisticated irrigation networks and farming practices evolved. This holistic framework also enabled precise dating of artifacts and structures, providing deeper insights into the socio-economic and environmental dynamics that shaped Khorezm's agrarian heritage.

## Analysis

Ancient Khorezm, located in the lower reaches of the Amu Darya River, is an oasis where unique natural-geographical conditions fostered a distinctive civilization.

Today, its territory spans northeastern Turkmenistan, the Republic of Karakalpakstan, and Uzbekistan's Khorezm Region. The agricultural culture of ancient Khorezm evolved in harmony with its natural-geographical environment, adapting to its dynamic river systems and fertile landscapes.

The natural-geographical environment was pivotal in shaping agricultural culture. Agriculture flourished in areas with abundant water and fertile soil, critical for sustaining crops. The fertility of Khorezm's lands depended heavily on water supply from the Amu Darya, which frequently shifted its course, creating both opportunities and challenges. Periodic floods disrupted agricultural organization, necessitating adaptive irrigation systems. Studying river channels and the oasis's natural environment is essential for understanding Khorezm's history, illuminating the landscape of each historical period. The natural-geographical environment is documented in ancient written sources, geological studies, and archaeological research, providing a multidimensional view of its impact.

The study of Khorezm's natural-geographical environment can be categorized into: 1. Written source descriptions; 2. Geological research; 3. Archaeological research. Initial data on ancient Khorezm's rivers and lakes appear in the Zoroastrian sacred text, the Avesta. In the "Mihr-Yasht-X" section, "Khvarizam" (Khorezm) is noted as the final region along wide, navigable rivers, following Ishkata, Margush, and Gava [1, p. 57]. The Amu Darya, termed "Vakhvi Datya," was revered as sacred, with agriculture – utilizing water effectively – considered an honorable profession. The Vendidad and Visparad sections glorify agriculture as a defense against evil. The Vendidad's third fargard states: "When crops grow in fields, demons rise. When wheat flourishes green, demons tremble. When wheat becomes flour, demons wail. Where wheat sprouts, demons cannot approach. Where wheat is stored, it's as if heated iron binds their necks" [2, p. 115]. These texts highlight agriculture's spiritual and economic significance, emphasizing its role in sustaining communities and shaping Khorezm's cultural identity through sophisticated irrigation and cultivation practices.

## Results

The Avesta highly exalts agriculture, placing particular emphasis on wheat cultivation. It states, "Whoever sows wheat sows Asha (Truth). They cause the religion of Mazda to flourish repeatedly. They empower the Mazda religion with a force equivalent to hundreds of praises, offerings, and tens of thousands of sacrifices." In the Vendidad section of the Avesta, Ahura Mazda, the god of goodness, is equated with farmers. It is described that he sowed the most wheat, herbs, and fruit trees, brought water to arid

lands, and plowed waterlogged lands. Lands left uncultivated for long periods are described as unfortunate. It is stated that if someone plows the land with both hands, the land grants them prosperity and bestows abundant fruits. It is also noted that people come to cultivated lands seeking bread, and only then do crops yield abundant harvests, highlighting the gathering of people and collective labor in agricultural areas. It is particularly emphasized that wheat is what sustains people's sustenance. The Avesta repeatedly asserts that Ahura Mazda himself is responsible for ensuring abundant harvests from agriculture. In the Visparad section, the necessity of digging canals from rivers, constructing irrigation ditches, and reclaiming deserts and steppes is also mentioned [8, p. 39]. It is further indicated that one of the ways to achieve high agricultural yields is to desalinate the soil and wash away its salinity.

The Avesta teaches that to do good, one must labor and create material wealth with their own hands. It emphasizes that those who do not work will ultimately face humiliation and poverty. It states, "You will be among those begging for bread at the doors of strangers. Your eyes will look to the road. They will drive you away from their thresholds. A person who does not labor will truly stand among beggars, bowing forever at others' doors." This highlights the profound educational significance of the Avesta in promoting agriculture and other professions as means to protect people from humiliation and poverty.

Ancient authors provided important geographical information about the Amu Darya, Syr Darya, Caspian Sea, and Aral Sea, referring to these water bodies by various names depending on the era and context. The earliest written sources, described by Hecataeus and Herodotus, provide some of the oldest depictions of Central Asia [4, pp. 27–29]. Greek and Roman historians, such as Aristobulus, Strabo, Varro, Pliny, and Polybius, preserved significant historical-geographical information about the Amu Darya (Oxus), Syr Darya (Jaxartes), and the Aral Sea. Notably, Strabo, in his Geography, precisely described the distance between the Amu Darya and Syr Darya, stating, "The distance in the lower reaches of the Oxus and Jaxartes is 80 parasangs or 2,400 stadia" [6, p. 267]. According to modern calculations, this distance equates to 420 kilometers, demonstrating the scientific accuracy of the information provided in ancient sources.

## Conclusion

The study of agricultural formation in the ancient Khorezm Oasis requires a thorough analysis of geographical data from Greek and Roman sources. Hecataeus and Herodotus note that "the Khorezmians live east of the Parthians" [9, p. 98], supporting the hypothesis that Khorezmians initially inhabited eastern regions before migrating to the Amu Darya's lower basin. A key scientific question is the influence of southern agricultural practices, particularly from the Murghab and Tedjen river basins, on Khorezm's agricultural culture. Comparative analysis of agricultural systems in the lower Amu Darya and southern oases like Margiana (Murghab) and Parthia (Tedjen) is essential. This comparative approach reveals similarities and differences in irrigation structures, canal networks, agricultural practices, and socio-economic systems. Such analysis highlights southern Iran's cultural-geographical influences on Khorezm's agricultural development [7, pp. 87–89]. Technological advancements, labor tools, crop cultivation techniques, and water distribution methods demonstrate historical-cultural connections [5, pp. 103–107], enriching Khorezm's agrarian systems with innovative irrigation and farming practices.

Interconnected studies of archaeological findings – such as ancient irrigation systems, agricultural tools, seed storage facilities, and cultivated fields – across various historical stages of the Khorezm state trace the deep roots of agrarian progress

[3, pp. 51–54]. This comprehensive approach elucidates natural-geographical conditions and clarifies how social, political, and economic processes shaped agricultural evolution. It underscores the resilience and adaptability of Khorezm's agricultural culture, which integrated advanced southern techniques while addressing local environmental challenges like river course shifts and floods. This synthesis fostered sustainable development, cultural exchange, and technological innovation, positioning Khorezm as a vital hub in ancient Central Asian civilizations.

### Foydalanilgan adabiyotlar ro'yxati

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