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AGRICULTURAL TECHNOLOGY IN EARLY KASHMIR

Tariq Ahmad Kumar

RESEARCH ARTICLE

Author Details:
Research Scholar, Department of History, University of Kashmir, Kashmir, India

Corresponding Author:
Tariq Ahmad Kumar

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Abstract

The economic base of early India, much like the present, was firmly anchored in agriculture, with regional states relying heavily on agrarian systems for their sustenance and development. This paper examines the early period of Kashmir, specifically between the 6th and 13th centuries CE—a phase characterized by notable advancements in agricultural technology. The innovations not only supported the agrarian economy of the region but also served as a driving force behind significant socio-political transformations. By analysing the techniques and practices introduced during this time, the study demonstrates how they enhanced agricultural productivity in Kashmir. It further explores the dynamic relationship between technological progress, economic stability, and social change, offering a deeper understanding of how agricultural innovation influenced the historical development of the region. Ultimately, the paper highlights the central role of agriculture in shaping the socio-economic and political evolution of early Kashmir.

Keywords: *Technology, Agriculture, Araghatta, Khari*

Introduction

The term "agriculture" originates from the Latin word *agricultura*, meaning the cultivation of the soil. Traditionally, it denoted the science and art of growing crops, harvesting them, and rearing livestock. However, this conventional definition is now regarded as limited. In its modern sense, agriculture extends beyond crop cultivation and animal husbandry to include a broad range of associated activities and services, reflecting its expanded scope and complexity.

In ancient Sanskrit, agriculture is referred to as *Kṛsi*, meaning "to plough." Yet, as explained by the sage Patanjali, *Kṛsi* encompasses far more than the act of ploughing. It signifies a comprehensive approach to farming, including responsibilities such as supporting the ploughman, managing seeds and draught animals, and carrying out essential agricultural operations like digging, sowing, harvesting, and winnowing. This broader interpretation underscores the multifaceted nature of agriculture as an integrated system of practices vital for sustaining life and society.

Viewed in this light, agriculture emerges not merely as a means of food production but as a deeply interconnected cultural and economic activity that has shaped human civilization over millennia. It has been the foundation of early societies and a key force in the rise of civilizations. In the Indian context, agriculture has occupied a central position since antiquity, forming the backbone of the economy and often described as *varta*, or livelihood. As noted by historian U. N. Ghoshal, agriculture has remained the principal occupation of the Indian people since ancient times, highlighting its enduring importance.

Technological Changes in Early Medieval India

India's agricultural legacy stretches back several millennia, with its earliest roots traced to the Neolithic farming community at Mehrgarh, dating to around the 6th–5th millennium BCE. The shift to settled agriculture marked a decisive turning point in human history, enabling stable food production, population growth, and the emergence of complex societies. In the early medieval period, agriculture remained the backbone of the Indian economy, underpinning both political authority and economic prosperity. This era witnessed the rise of numerous regional states whose strength was closely tied to the expansion of agrarian settlements, which served as the primary source of revenue and stability. The period also saw significant advancements in agricultural technology, particularly in irrigation. Improvements in water management systems—such as canals, tanks, lakes, and wells—contributed to increased agricultural productivity and the expansion of cultivable land. These innovations not only strengthened the agrarian economy but also reshaped the socio-political landscape, reinforcing the centrality of agriculture in

sustaining state power and societal development. In this context, agriculture functioned not merely as a means of subsistence but as a transformative force driving economic growth and structural change.

The success of agriculture was fundamentally dependent on the effective management of water resources. Early medieval societies demonstrated a sophisticated understanding of irrigation, recognizing the need for balance in water usage. This insight is reflected in the observation attributed to Narada, who emphasized that while water is essential for crop production, both scarcity and excess can be equally harmful. Such perspectives highlight the nuanced knowledge of environmental management in early Indian agrarian thought. Historical evidence points to substantial administrative involvement in the construction and maintenance of irrigation infrastructure. Large-scale projects, including dams, canals, and embankments, were undertaken to regulate water flow, prevent floods, and ensure consistent agricultural output. The state played an active role in sustaining these systems, recognizing their importance for economic stability and revenue generation. Flood control measures and permanent irrigation techniques marked a shift toward more organized and sustainable agricultural practices. The importance of water conservation is further emphasized in the ancient text *Krsi-Parasara*, which uses metaphor to stress the necessity of preserving water resources for successful cultivation. This reflects both the cultural and practical significance of irrigation in Indian agrarian traditions. Broadly, irrigation systems during this period can be categorized into three types: natural or inundation irrigation, localized small-scale systems such as wells and tanks, and large supra-local networks involving reservoirs and canals. Each type addressed specific environmental conditions, collectively supporting agricultural expansion across diverse regions. Through these innovations and administrative efforts, early medieval India exemplifies how effective water management and agricultural development were integral to socio-economic transformation. The period stands as a testament to the ingenuity of its societies in harnessing natural resources, laying a durable foundation for India's long-standing agrarian civilization.

Water, Engineering, and Agrarian Transformation in Early Medieval Kashmir

Access to water was a decisive factor in agricultural development, and Kashmir provides a compelling example of how effective water management can shape an agrarian economy. Although irrigation canals existed in earlier periods, their expansion and systematic use became especially prominent during the early medieval era (6^{th} to 13^{th} century CE). Unlike many other regions of India, agriculture in Kashmir was not heavily dependent on rainfall, owing to its rich endowment of rivers, lakes, and springs. The valley's distinctive topography—marked by elevated plateaus and a network of natural waterways—enabled the development of sophisticated artificial irrigation systems that carried water even to higher terrains. The 19th-century observer Walter R. Lawrence noted that Kashmir's natural streams could be efficiently diverted for irrigation, reflecting the ingenuity of its inhabitants in utilizing available resources.

The origins of irrigation in Kashmir can be traced to early rulers such as King Suvarna, who constructed the Suvarnamani canal (later known as Sunman Kul), irrigating parts of the Advin Pargana in present-day Kulgam. Valuable insights into this early phase are preserved in *Rajatarangini* by Kalhana, which records the contributions of rulers like King Damodara II, who built the Guddasetu dam and flood-control structures, and King Baka, credited with the Bakavati Canal. The continued visibility of these early irrigation works, as noted by Aurel Stein, underscores their long-term significance.

The proper technological innovations in agrarian system started under Karkotas. Among the most significant was the introduction of water wheels, known as *araghatta* or *ghatiyantra*, which enabled the lifting of water from rivers to higher fields. These devices became more efficient with the development of rope-chain mechanisms, allowing irrigation from greater depths. Such advancements made it possible to cultivate previously inaccessible areas, particularly the elevated *Karewas*. The foundations for these developments were laid earlier during the reign of Lalitaditya Muktapida, who promoted large-scale irrigation projects, including the construction of water wheels (*Ambhaprataranas*) and wells. These initiatives expanded the scope of cultivation and improved agricultural yields.

A major turning point in Kashmir's agrarian history occurred during the reign of Avantivarman (855–883 CE). His rule witnessed an unprecedented expansion of agriculture, supported by extensive canal construction, land reclamation, and improvements in river management. Central to this transformation was the engineer Suyya, whose innovative interventions addressed the persistent problem of flooding caused by Wular Lake and the valley's drainage constraints. By clearing obstructions in the Jhelum River at the Baramulla gorge, Suyya restored the river's flow and significantly reduced flooding. His construction of embankments and irrigation channels further regulated water distribution, expanded cultivable land, and enhanced productivity. Suyya's approach to irrigation was both practical and methodical. He studied soil conditions, observed moisture retention patterns, and devised tailored irrigation schedules for different areas. This scientific management of water resources ensured efficient usage and long-term sustainability. His efforts not only improved agricultural output but also encouraged rural expansion, leading to the establishment of new settlements. Recognizing his contributions, Kalhana honoured him with the title *Annapati* ("Lord of Food"). The dramatic fall in rice prices during this period reflects the scale of agricultural prosperity achieved under his guidance.

Together, the contributions of Lalitaditya and Avantivarman represent a high point in Kashmir's engineering and agrarian history. The cumulative impact of these innovations was transformative. Expanded irrigation networks enabled the cultivation of commercial crops such as saffron and grapes, facilitated multiple cropping, and supported a thriving rural economy. Agriculture, strengthened by technological ingenuity and state support, became the cornerstone of Kashmir's prosperity. This period thus stands as a remarkable example of how effective water management and engineering expertise can drive economic growth, social change, and long-term sustainability in an agrarian society.

Conclusion

Agriculture formed the backbone of the economy and social life in early medieval Kashmir, much as it did across the Indian subcontinent. This period witnessed significant advancements in agrarian practices, particularly in the domain of water management, which was essential in overcoming the region's environmental challenges, including recurrent flooding and uneven water distribution. The systematic construction of canals, embankments, and the widespread use of water-lifting devices transformed the agricultural landscape, enabling the expansion of cultivable land and ensuring more stable production. The contributions of rulers such as Lalitaditya Muktapida and Avantivarman, along with the engineering brilliance of Suyya, were central to this transformation. Their innovative interventions not only improved irrigation efficiency but also promoted rural expansion, economic prosperity, and long-term sustainability. These developments reflect a sophisticated understanding of environmental management and resource utilization. The enduring legacy of this period is visible in the remnants of ancient irrigation systems and the continued relevance of water management practices in the region. Ultimately, the agrarian advancements of early medieval Kashmir highlight the crucial role of technological innovation and state initiative in shaping economic structures and societal progress, leaving a lasting imprint on the historical trajectory of the region.

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References

1. Bamzai, P. N. K. (2009). *A History of Kashmir.* Srinagar: Gulshan Books, 130-132.
2. Chakravarti, Ranabir. (1998). "The Creation and Expansion of Settlements and Management of Hydraulic Resources in Ancient India," in *Nature and the Orient: The Environmental History of South and Southeast Asia*, ed. Richard H. Grove et al. Delhi: Oxford University Press, 88.
3. Chakravarti, Ranabir. (2008). "Agricultural Technology in Early Medieval India (c. A.D. 500-1300)," *The Medieval History Journal*, 11, 2: 229-258.
4. Chakravarti, Ranabir. (2016). *Exploring Early India Up to c. AD 1300*. New Delhi: Primus Books, 353.
5. Chattopadhyaya, B. D. (1994). *The Making of Early Medieval India.* New Delhi: Oxford University Press, 38-58.
6. Chauhan, Gian Chand. (2003). *Economic History of Early Medieval Northern India*. New Delhi: Atlantic Publishers and Distributors, 84-85.
7. Gangopadhyay, Radharaman. (1932). *Agriculture and Agriculturists in Ancient India* Serampore: N. C. Mukherjee and Co., 54.
8. Gupta, Geetika. (2017). "Rulers, Merchants and the Growth of Rural Economy in Early Medieval Western India," *Indian History Congress*, Vol.78, 169.
9. Habib, Irfan. (2008). *Technology in Medieval India c. 650-1750.* New Delhi: Tulika Books, 10.
10. Jamwal, Suman. (2002). *Agriculture and Commerce in Early Medieval Kashmir* Jammu: Jay Kay Book House, 44.
11. Kilam, Jai Lal. (1955). *A History of Kashmiri Pandits*. Srinagar: S. N. Dar, 9.
12. Lawrence, Walter Roper. (2014) *The Valley of Kashmir*. Srinagar: Ali Mohammad and Sons, 323-324.
13. Maity, S. K. (1957). *Economic Life of Northern India in the Gupta Period (c. A.D. 300-550)*. Calcutta: The World Press Ltd, 71.
14. Ray, S. C. (1969). *Early History and Culture of Kashmir*. New Delhi: Munshiram Manoharlal, 122.
15. Sadaf, Syeda. (2016). "Agrarian Expansion in Northern India in Early Medieval Period (c. A.D. 800-1200)," *Journal of Social Science and Humanities Research,* 1, 2: 73.
16. Srivastava, Surabhi. (2005-2006). "Means of Irrigation in North Central India During the Early Medieval Period," *Indian History Congress*, Vol. 66, 259.
17. Stein, M. A. (2019). *Kalhana's Rajatarangini*. Srinagar: Gulshan Books.