

The structural characteristics and driving mechanism of collaborative innovation network for saline-alkali land development in China

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Abstract

It is challenging for a single development subject to complete complex scientific research tasks due to the peculiarities of saline-alkali land. Collaborative innovation and cooperation between development subjects are increasingly vital. This paper first constructs an undirected weighted collaborative innovation network from the upstream, midstream, and downstream levels of technological innovation for saline-alkali land development, analyzing the network's structural characteristics and spatial distribution features. Then uses ERGM to explore the internal and external driving mechanism for network formation from network self-organization, subject characteristics, and exogenous environmental factors. The results demonstrate that the distribution of collaborative innovation networks for saline-alkali land development is relatively uniform. However, there are also clusters, and the clusters are mostly centered on universities and scientific research institutions. Both the development subjects and clusters present regional features. Centrality and transitivity are crucial in the internal driving mechanism. In the external driving mechanism, the Matthew effect is modest, and the Homozygous effect is considerable; Organizational and technical proximity play a positive role; Geographical and institutional proximity play a blocking role. This study also provides practical enlightenment for encouraging horizontal and vertical collaborative innovation of sustainable development of saline-alkali land.

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