

## 文冠果土壤微生物研究进展

姬媛媛

(内蒙古自治区林业科学研究院 内蒙古 呼和浩特 010010)

**摘要：**文冠果作为一种耐瘠薄、耐干旱、耐盐碱的木本油料树种，广泛分布于我国北方地区。土壤微生物数量庞大、种类繁多，是重要的分解者，在物质循环和能量流动中扮演着重要角色，对生态环境的作用不容小觑。**【研究目的】**近年来，随着对文冠果功能性价值的深入研究，其土壤微生物研究逐渐成为热点。这些微生物不仅与文冠果的生长发育和养分吸收密切相关，还可能对其抗逆性、产量和品质等产生重要影响。通过深入系统地研究文冠果形态特征、生态习性、种植现状和适宜土壤特性，探析文冠果土壤微生物研究历程和重要发现，汇总土壤微生物种类、功能、影响因素和研究技术方法，揭示文冠果土壤微生物在生态系统服务中的关键作用，从根本上了解文冠果的生长机制，为优化文冠果的栽培管理、提高土壤生产力及文冠果产业的可持续发展提供科学意义和实际应用价值。**【研究进展】**目前，文冠果土壤微生物的研究主要集中在文冠果根际土壤微生物、根系内生真菌、根部瘤状物的微生物群落结构及其对植物生长和土壤养分循环的影响等方面。从传统的纯培养技术到现代的分子生物学技术，再到多组学研究的发展，利用多样、高效的研究方法和技术，对土壤微生物的群落结构、功能及它们在生态系统中的作用进行分析，总结土壤微生物对文冠果生长和生态环境的潜在影响。**【发展方向】**未来，我们应进一步挖掘文冠果土壤微生物的代谢能力和生态功能，研究文冠果根系与土壤微生物间的互作机制，分析文冠果土壤微生物对不同环境压力的响应机制，如在干旱、盐碱、重金属污染等环境抗逆性方面的作用，并研发文冠果专用的微生物菌肥，以改良土壤、提高文冠果的产量和品质，为文冠果的高效、可持续种植提供更加科学、全面的理论支持和技术指导。

**关键词：**文冠果；土壤微生物；根际土壤；根系内生真菌

## Research Progress on Soil Microorganism of *Xanthoceras sorbifolia*

**Abstract :** *Xanthoceras sorbifolia* Bunge, as a kind of woody oil tree species with barren resistance, drought resistance and saline-alkali resistance, is widely distributed in northern China. Soil microorganisms are important decomposers with a large number and a wide range of species. They play an important role in material circulation and energy flow, and their role in the ecological environment cannot be underestimated. **【Objective】** In recent years, with the in-depth study of the functional value of *Xanthoceras sorbifolia* Bunge, its soil microbial research has gradually become a hot spot. These microorganisms are not only closely related to the growth and nutrient absorption of *Xanthoceras sorbifolia* Bunge, but also may have an important impact on its stress resistance, yield and quality. Through in-depth and systematic study of the morphological characteristics, ecological habits, planting status and suitable soil characteristics of *Xanthoceras sorbifolia*, the research process and important findings of soil microorganisms in *Xanthoceras sorbifolia* were analyzed, and the types, functions, influencing factors and research techniques of soil microorganisms were summarized. The key role of *Xanthoceras sorbifolia* soil microorganisms in ecosystem services, fundamentally understand the growth mechanism of *Xanthoceras sorbifolia*, and provide scientific significance and practical application value for optimizing the cultivation and management of *Xanthoceras sorbifolia*, improving soil productivity and sustainable development of *Xanthoceras sorbifolia* in industry. **【Research progress】** At present, the research on soil microorganisms of *Xanthoceras sorbifolia* ma

inly focuses on the microbial community structure of rhizosphere soil microorganisms, root endophytic fungi and root nodules of *Xanthoceras sorbifolia* and their effects on plant growth and soil nutrient cycling. From the traditional pure culture technology to modern molecular biology technology, and then to the development of multi-omics research, the community structure and function of soil microorganisms and their role in the ecosystem were analyzed by using various and efficient research methods and techniques, and the potential effects of soil microorganisms on the growth and ecological environment of *Xanthoceras sorbifolia* were summarized. 【Development direction】 In the future, we should further explore the metabolic capacity and ecological function of *Xanthoceras sorbifolia* soil microorganisms, study the interaction mechanism between *Xanthoceras sorbifolia* roots and soil microorganisms, analyze the response mechanism of *Xanthoceras sorbifolia* soil microorganisms to different environmental pressures, such as drought, saline-alkali, heavy metal pollution and other environmental stress resistance, and develop special microbial fertilizer for *Xanthoceras sorbifolia*, so as to improve soil, increase the yield and quality of *Xanthoceras sorbifolia*, and provide more scientific and comprehensive theoretical support and technical guidance for the efficient and sustainable planting of *Xanthoceras sorbifolia*.

**Keywords :** *Xanthoceras sorbifolia* ; soil microorganisms ; rhizosphere soil ; endophytic fungi in roots.