



Community Internal Fluctuation Strengthen Fungal Resistance to Water Stress

Changhui Wang, Nannan Wang, and Kuanhu Dong

Institute of Botany, Chinese Academy of Sciences, Beijing, China (wangch@ibcas.ac.cn)

Abstract

Soil microbial community are at the heart of almost all ecosystem processes and its response pattern to environmental change influence the ecosystem healthy and functional integrity. Understanding the stability including resistance and resilience of bacterial and fungal communities are important for predicting the response to environment change in future. In this study, we observed how the bacterial and fungal communities responded to precipitation change in semi-arid grassland, through calculating alpha diversity, beta diversity and composition turnover as well as their coefficient variation in both temporal and spatial scales. The results showed that both increased and decreased precipitation reduced the bacteria richness while increase the evenness of bacteria. The effect of precipitation on fungi was slighter than bacteria. It suggested that the fungal community were more resistance than bacterial community to water stress. Furthermore, the coefficient variation of fungi, both diversity and composition turnover, were larger than bacteria in temporal and spatial scales. It further suggested that the community internal fluctuation enhanced fungal resistance in ever-change precipitation environment. The possible response patterns were also demonstrated as Fig. 1. We estimated resistance of bacterial and fungal community, but the extending works were needed to qualify the resilience of soil microbial community.

Key words: Bacteria and fungi, Microbial diversity, Precipitation, Resistance, Semi-arid grassland;