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研究论文

不同耕作措施对土壤真菌群落结构与生态特征的影响

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摘要 以传统耕作（T）为对照，研究了免耕秸秆覆盖（NTS）、免耕（NT）、秸秆还田（TS）3种保护性耕作措施对黄土高原西部雨养农业区耕层土壤真菌数量、垂直分布及群落结构的影响。结果表明：不同耕作措施对土壤真菌数量有一定影响，耕层土壤真菌总数：TS＞T，NTS＞NT，T＞NT；耕作措施对真菌群落结构的影响比较明显，3种保护性耕作处理其土壤均以绿僵菌属（*Metarrhizium*）、腐霉属（*Phythium*）、曲霉属（*Aspergillus*）占绝对优势，B-P优势度指数三者之和都在0.6左右；而T处理占绝对优势的菌属是绿僵菌属（*Metarrhizium*）和镰刀菌属（*Fusarium*），B-P优势度指数二者之和在0.7左右；土壤真菌群落的多样性指数和均匀性指数均呈现NTS＞TS＞T＞NT。因此，在黄土高原西部雨养农业区实施NTS和TS耕作措施，既有利于土壤有益真菌数量的增加，提高养分转化率，又有利于促进该区农业的可持续发展。

关键词 耕作措施 真菌 群落结构 生态特征

分类号 Q93,S31,S34

Effects of different tillage practices on fungi community structure and ecologic characteristics in loess soils

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Abstract Effects of three conservation tillage practices in contrast with conventional tillage (T) on the fungi population, vertical distribution and community structure were studied under field condition of the semi-arid areas of the Loess Plateau. Three conservational tillage practices included conventional tillage with straw incorporated (TS), no-till with no straw cover (NT), no-till with stubble retention (NTS). Results showed that the tillage practices had no significantly effects on total fungi populations. However, the population of fungi was higher on TS than T, NTS> NT and T >NT. Tillage practice had significantly effects on the fungi community structure in the plough layer. For the three conservation tillage practices, the dominant communities were *Metarrhizium*, *Phythium*, *Aspergillus* with the dominance index of Berger-Parker about 0.60, whereas the dominant communities for the conventional tillage were *Metarrhizium* and *Fusarium* with the dominance index of Berger-Parker about 0.70. The order of the index for the diversity and uniformity of soil fungi communities were as follows: NTS＞TS＞T＞NT. Therefore NTS and TS not only increased the number of beneficial fungi and enhance the nutrient conversion rate， but also improve the sustainable development of agriculture in this region in the long-term.

Key words tillage practices _ fungi _ community structure _ ecologic characteristics

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