

## 陕西农田土壤动物群落与长期施肥环境的灰色关联度分析

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## Grey relationship between cropland soil fauna community and the environment factors in Shaanxi

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**摘要** 2001年7月至2002年10月,对陕西黄土区6种长期定位施肥农田土壤动物群落进行调查,采集72个定点土壤样品,通过手捡法和Cobb过筛法,共获得农田土壤动物标本5495只,隶属6门11纲22目;分析测定了土壤环境中的3类土壤微生物(细菌、真菌和放线菌)和土壤因子的5项指标(耕层全N、有机质含量、有效P、pH、土壤含水量)。以长期定位施肥农田土壤动物5种优势类群、弱势类群以及农田土壤动物个体数为研究对象,应用灰色理论对长期定位施肥农田土壤动物群落与土壤环境之间的灰色关联系数和灰色关联度进行了分析。结果表明,本研究选取的环境因子与农田土壤动物因子的关联表现出一定的规律性,土壤pH和含水量对土壤动物个体总数的影响最大。对农田土壤动物的影响的大小顺序为:全N>有机质>含水量>pH>细菌>真菌>放线菌>有效P。优势分析显示,土壤有机质对土壤动物的影响最大,土壤全N的影响次之,其灰色综合关联系数分别为0.6555和0.6444;细菌的影响最小,其灰色综合关联系数为0.5429。土壤因子对农田土壤动物的影响大于土壤微生物。

**关键词:** 农田土壤动物 长期施肥 土壤环境因子 灰色关联分析 农田土壤动物 长期施肥 土壤环境因子 灰色关联分析

**Abstract:** From Jul. 2001 to Oct. 2002, the composition and community structure of cropland soil fauna on a loess soil were studied using hand picking and Cobb method. Totally, 72 soil samples throughout 6 long-term stationary experiments were collected and 5495 cropland soil fauna specimens, which belonged to 6 Phyla, 11 Classes, 22 Order, were obtained. The relationship between cropland soil fauna community and the environment factors was analyzed by gray relationship based on individual of cropland soil fauna(dominant communities, rare community and total numbers of cropland soil fauna), soil microbe(bacteria, fungal and actinomyces) and soil properties(total nitrogen, organic matter, pH, available phosphorus and water content). The result showed that the correlation between environment factors, which were selected by this paper, show an unvarying regularity. pH and soil water content has the greatest affection on individual of soil fauna. The sequence of the affection on cropland soil fauna by soil environment factors is total nitrogen>soil organic matter>containing water>pH>bacteria>fungal>actinomyces>available phosphorus. The results of dominance analysis indicated that the organic matter has the greatest affection on cropland soil fauna, followed by soil total nitrogen. The synthesis grey correlation reading of organic matter and total N with soil fauna was 0.6555 and 0.6444, respective. The affection of bacteria on soil fauna is smallest, its synthesis grey correlation reading is 0.5429. The influence of soil factors on soil fauna was greater than that of soil microorganism.

**Keywords:**

## 引用本文:

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