

## 黄土旱塬塬面生态系统土壤硝酸盐累积分布特征

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### Nitrate accumulation and distribution in soil profiles in ecosystem of upland on the Loess Plateau

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**摘要** 研究了渭北旱塬塬面不同土地利用方式下土壤剖面硝酸盐含量与分布特征,并与长期田间定位试验结果进行对比分析。结果表明,地表有植物生长与氮肥投入显著影响土壤剖面硝态氮含量与分布。土壤0-400.cm硝态氮累积含量顺序是:苹果园>高产粮田>裸地>刺槐林地>荒地>人工草地。苹果园土壤剖面硝态氮在深层累积严重,累积层在80-160.cm,最高含量达201.9.mg / kg。高产农田也发生了硝态氮的淋溶累积,累积峰出现在120-140cm土层,最高含量为44.1.mg/kg。林草地因为没有氮肥投入,剖面硝态氮含量处于很低水平。由于塬面土地大部分为高产农田与苹果园,土壤中累积的大量硝态氮既浪费了资源又可能对环境造成潜在的威胁,建议降低氮肥用量,特别是果园,并建议对大量施用化肥对区域生态环境与苹果品质的影响进行研究。

**关键词:** 旱塬 土地利用方式 苹果园 硝态氮累积 旱塬 土地利用方式 苹果园 硝态氮累积

**Abstract:** Soil nitrate accumulation in North China has been reported by many researchers. The land use patterns changed markedly along with agricultural productivity in the flat parts of Weibei dryland on the Loess Plateau. The rotation system of gramineous crop/legumina grass was replaced by winter wheat or maize cropping. Furthermore, traditional crop like winter wheat decreased and apple orchard increased continuously. Nitrate accumulation in the soil profiles under the different land use patterns was studied in this area, compared with a long-term experiment nearby the studied area. The results showed that nitrates accumulated in soil profile in apple orchard and farmland, but did not in soil of artificial grassland and younger forest in which no nitrogen was applied. Generally, the soil layer with nitrate accumulation was located at 40-260 cm soil depth. Nitrogen fertilizers were heavily applied in the apple orchard, resulting in distinct nitrate accumulation. Because a majority of farmland is used for productive agriculture or apple orchard, the amount of nitrogen application should be reduced. We suggest that effects of nitrogen application on eco-environment and quality of apple should be studied in the future.

**Keywords:**

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