

## 长期施肥对黄土旱塬区土壤—植物系统中氮、磷养分的影响

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## Effects of long-term fertilization on nutrient variety of soil and plant systems in dry-land of Loess Plateau

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摘要

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**摘要** 对1984年建立的长期试验田,分析了2005年小麦产量、养分吸收及土壤养分变化。结果表明,单施磷肥增产25.6%,单施氮肥增产48.1%,其吸氮、磷量也相应增加,但收获指数显著低于对照;氮磷配施增产幅度为101.3%~302.8%,养分吸收量增加显著,最佳施肥量为 $N_2P_2$

( $N.90.kg/hm^2$ 、 $P.56.4.kg/hm^2$ )。施肥明显改变了耕层土壤养分的含量,也影响了养分在土壤剖面的分布。氮磷配施是培肥土壤的有效途径,耕层土壤全磷增加了8.3%~45.2%,速效磷增加54.8%~917.8%。中等施氮( $N.90.kg/hm^2$ )水平下,随着磷的增加,耕层土壤全磷累积和施磷量的关系为 $y=0.002x-0.112$ 。速效磷含量增加和磷肥用量的关系为 $y=9.6537\ln(x)-35.371$ ,施肥对60.cm以下磷素影响较小。

**关键词:** 长期定位试验 小麦 养分吸收量 土壤养分 长期定位试验 小麦 养分吸收量 土壤养分

**Abstract:** Based on 20 years of long-term experiment of applying fertilizer on continuous wheat in dry-land of Loess Plateau. Wheat yield, nutrient uptake and soil nutrient were analyzed in year 2005. The results showed that yield was increased by 25.6% and 48.1% with single application of P and N fertilizer, respectively. The N and P uptake was increased too, but the harvest index was decreased. The combination of N and P could increase yield by 101.3%-302.8% and nutrient uptake significantly. Soil nutrient content in surface soil (0-20 cm) and the distribution of nutrient in soil layer varied. The combination of N and P was an effective ways to soil fertility management. Total P and available P in soil increased by 8.3%-45.2% and 54.8%-917.8%, respectively. The relation between total P accumulation and the amount of P fertilizer applied was  $y = 0.002x - 0.112$ , and the relation between available P and the amount of P fertilizer applied was  $y = 9.6537 \ln(x) - 35.371$ . The difference was not that significant in subsoil layer.

**Keywords:**

## 引用本文:

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