

长期不施肥条件下几种典型土壤全磷和Olsen-P的变化

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Total-P and Olsen-P dynamics of long-term experiment without fertilization

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2 Institute of Agricultural Resources and Regional Planning, CAAS, Beijing 100081, China[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(908KB\)](#) [HTML 0KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 研究了11个不同气候条件、不同耕作制度、典型土壤类型长期定位试验不施肥处理土壤全磷和Olsen-P变化及其影响因素。结果表明,在长期不施肥条件下耕作,土壤Olsen-P含量下降比全磷的明显;在试验进行5年左右,土壤全磷含量都有所降低,以后各点表现不尽相同,新疆灰漠土、长沙水稻土和郑州潮土全磷含量随时间延长呈显著直线下降,其它试验点全磷的变化不明显;作物携出磷与土壤全磷下降之间,无论绝对含量或相对含量都不成比例。土壤Olsen磷下降率比全磷高几倍。Olsen-P下降趋势与起始土壤Olsen磷含量有关:起始土壤Olsen-P磷大于20 mg/kg时,25年内一直呈现明显下降趋势,降低40.5 mg/kg,特别是前5年下降更快,降低30 mg/kg;起始土壤Olsen-P为10~20 mg/kg时,下降趋势比前者缓慢,15年内一直呈明显下降趋势,下降19 mg/kg,前5年下降15 mg/kg,15年后几乎不变;起始土壤Olsen-P小于10 mg/kg时,25年内无明显变化。Olsen-P下降量与起始Olsen-P占全磷的比例成显著直线关系。

关键词: 长期定位试验 不施肥土壤 全磷 Olsen-P 长期定位试验 不施肥土壤 全磷 Olsen-P**Abstract:**

Dynamics of total phosphorus and Olsen-P of soils without fertilization were studied with long-term experiment on eleven typical soils. The results indicated that changes of Olsen-P were more significant than that of total P over time in all soils. Soil total P decreased linearly with time for gray desert soil, paddy soil and fluvo-aquic soil, but did not change significantly for other soils. Decreases in soil total P was not significantly correlated with crop P uptake. Tendency of soil Olsen-P decrease differed with initial Olsen-P content in the soils. When initial Olsen-P was greater than 20mg/kg, it decreased quickly and reduced 30 mg/kg in 5 years and reduced 40.5mg/kg in 25 years. When initial Olsen-P was between 10 mg/kg and 20 mg/kg, they decreased slowly and reduced 15 mg/kg in 5 years and 19mg/kg in 15 years. When initial Olsen-P was less than 10 mg/kg, there was no obvious change over time. The ratios of Olsen-P to total-P and avail-N to Olsen-P were two important factors influencing Olsen-P change. Olsen-P decreased linearly with ratio of Olsen-P to total-P.

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