



磷肥种类和用量对土壤磷素有效性和棉花产量的影响

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Effect of Applying Different Forms and Rates of Phosphoric Fertilizer on Phosphorus Efficiency and Cotton Yield

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摘要

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摘要 田间试验研究了两种磷肥不同用量对土壤磷素、棉花全生育期磷素的有效性以及棉花产量的影响。结果表明: 增施磷肥能增加棉田土壤速效磷、全磷含量、磷素活化系数以及棉花产量, 土壤速效磷和磷素活化系数平均比对照处理增加302%和180%。同时, 也能增加棉花对磷素的吸收和干物质的积累。但过量施用磷肥并不能显著增加棉花产量、吸磷量和干物质积累量。棉花对磷素的吸收和干物质积累以施磷量150 kg·hm⁻²最优。两种磷肥比较显示, 重过磷酸钙对棉田速效磷含量和磷素活化系数的贡献高于磷酸二铵, 分别比磷酸二铵高244%和325%。

关键词: 磷肥 棉花 土壤 磷素有效性 产量

Abstract: In this paper, the effects of two phosphorus fertilizers and their different concentrations on soil, phosphorus efficiency of plant on the whole growth period and yield for cotton were studied by field experiment. The results showed that application of phosphate could significantly increase available phosphorus and total phosphorus content of soil as well as phosphorus activation coefficient, the average contents of soil available phosphorus and phosphorus activation coefficient were 302% and 180% more than those of control, also application phosphate could increase the phosphorus absorption and dry matter accumulation. However, excessive application of phosphate fertilizer could not significantly increase the level of cotton yield, phosphorus absorption and dry matter accumulation. The amount of applying P₂O₅ of obtaining the optimal phosphorus absorption and dry matter accumulation was 150 kg·hm⁻². Comparison results showed available phosphorus content, phosphorus activation coefficient and cotton yield of single super phosphate (SSP) were 244% and 325% higher, respectively, than those of di-ammonium phosphate (DAP).

Keywords: phosphate cotton soil phosphorus efficiency yield

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