

有机-无机肥长期配施对潮土土壤肥力和作物产量的影响

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Effect of long-term located organic-inorganic fertilizer application on fluvo-aquic soil fertility and crop yield

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摘要

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摘要 以24年(1981~2004年)的肥料长期定位试验为基础,分析探讨了有机-无机肥长期配施对潮土土壤肥力和作物产量的影响。研究表明,除增施秸秆外,增施化肥也能提高土壤有机质的含量,但同时增施化肥和秸秆更有利于土壤有机质的积累。在提高有机质复合量方面,施用化肥的效果好于施用秸秆,而有机-无机肥结合效果较单一施用秸秆或化肥都要高;随秸秆或化肥施用量的增加有机质的复合度逐渐降低,但有机-无机肥结合施用可以提高有机质的复合度。有机-无机结合有利于改善土壤的物理性状,降低了土壤容重,提高了土壤田间持水量和饱和含水量,增加了土壤总孔隙度和毛管孔隙。单施秸秆肥和单施化肥均有显著的增产效应,而化肥的增产幅度远远大于秸秆肥,有机-无机结合的增产幅度在同等施肥量下较单独施用秸秆或化肥的产量都要高。结果表明,有机-无机结合较单一施用秸秆肥或化肥能更有效地提高潮土的土壤肥力,提高作物产量。

关键词: 有机-无机结合 长期定位试验 作物产量 土壤肥力 有机-无机结合 长期定位试验 作物产量 土壤肥力

Abstract: By a 24-year(1981-2004) long-term located fertilizer experiment,the effect of long-term combined application of organic and chemical fertilizers on fluvo-aquic soil fertility and crop yield was investigated in Hengshui,Hebei Province.The results showed that,both chemical and organic fertilization could significantly increase crop yield,but chemical fertilizer application was more effective.Combined application of organic straw and chemical fertilizer had a more pronounced yield response than single application of either.Applying chemical fertilizer also increased the soil organic matter content,but applying chemical fertilizer together with organic straw tended to accumulate more soil organic matter than single application of either.As to the compound quantity of soil organic matter,the chemical fertilizer proved to be better than that of straw,and combined application of both straw and chemical fertilizer was the best.The compound degree of soil organic matter decreased with the increasing single application rate of either straw or chemical fertilizer,but combined application of them could increase the compound degree of soil organic matter.The combining application of organic straw and chemical fertilizer could also improve soil physical properties: soil bulk density was lightened,field water holding capacity and soil saturated water content were increased,total soil porosity and soil capillary porosity were enhanced.Thus it was concluded that combining application of organic straw and chemical fertilizer could improve the fluvo-aquic soil fertility and increase crop yield.

Keywords:

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