

应用 ^{15}N 示踪研究不同有机物对烤烟氮素营养及品质的影响

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摘要: 【目的】了解有机肥氮对烤烟氮素营养的贡献及在烟株生长过程中的动态, 为烤烟合理施肥提供依据。【方法】采用 ^{15}N 同位素示踪方法, 研究菜籽饼肥、油菜秸秆、稻草秸秆中氮素对烤烟氮素营养的贡献及对烤烟品质的影响。【结果】结果显示, 有机添加物与无机氮肥配施中, 菜籽饼肥、稻草秸秆、油菜秸秆的氮素利用率分别为 19.5%、15.5%、8.1%, 相应无机氮肥的利用率分别为 41.1%、42.7%和 35.7%。菜籽饼肥、稻草秸秆、油菜秸秆对烤烟氮素累积量的贡献分别为 1.0%、2.4%、2.7%, 其中打顶 (63 d) 后饼肥、稻草秸秆、油菜秸秆的供氮量分别占其供氮总量的 4.4%、20.8%、18.9%。【结论】秸秆及饼肥对烤烟氮素营养的贡献率较低, 有机肥与无机氮肥配施降低了烟叶烟碱含量, 增加了糖碱比, 改善了烟叶品质, 其中秸秆还田的降碱作用大于饼肥, 可以作为降碱措施之一。

关键词: 菜籽饼肥; 稻草还田; 油菜秸秆; 氮素利用率; 氮素贡献率

The Effects of Various Organic Matters on the Nitrogen Nutrition of Flue-Cured Tobacco and Its Quality by ^{15}N

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Abstract: 【Objective】 The objective of this study is to understand the dynamics of nitrogen from organic matter during the tobacco growing process and its contribution of organic fertilizer nitrogen to nitrogen nutrition of flue-cured tobacco and to provide a basis for rational fertilization of the flue-cured tobacco. 【Method】 The rapeseed fertilizer, rice straw and rape straw were studied by ^{15}N tracer. 【Result】 The nitrogen utilization efficiency of rapeseed cake, rice straw and rape straw were 19.5%, 15.5% and 8.1%, respectively, and the inorganic fertilizer nitrogen utilization efficiency were 41.1%, 42.7% and 35.7% under combined application of organic additives and inorganic nitrogen fertilizer. The contribution rate of rapeseed cake, rice straw, rape straw to accumulated nitrogen of flue-cured tobacco were 1.0%, 2.4% and 2.7%, respectively, by the combined application of organic additives and nitrogen fertilizer. The contribution proportion of rapeseed cake, rice straw and rape straw after top pruning was 4.4%, 20.8%, and 18.9% to accumulated nitrogen of flue-cured tobacco, respectively. 【Conclusion】 The results demonstrate that the contribution of rapeseed cake, rice straw and rape straw to nitrogen nutrition of flue-cured tobacco is very low and the absorption of flue-cured tobacco for organic nitrogen accord with the nitrogen needs laws of high-quality tobacco. It also indicates that the combined application of organic additives and inorganic nitrogen fertilizer reduced the nicotine content of tobacco, increased the sugar/nicotine ratio and improved the quality of tobacco. The role of rice and rape straw is greater than the rapeseed cake, which can be used as measures to decrease nicotine content.

Key words: rapeseed fertilizer; rice straw; rape straw; nitrogen utilization rate; nitrogen contribution rate

0 引言

【研究意义】在一定的环境和品种条件下, 施肥

是调控烟叶产量和质量的关键。研究表明, 一定比例的有机肥与化肥配合施用可以促进烟株的生长发育、提高烟叶的产量、增加烟叶的香气量和改善烟叶化学

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