

## 氮磷钾配施对填充型烤烟烟碱含量的影响

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Effects of combined fertilization of N, P, and K on nicotine content of filling type flue-cured tobacco.

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## 摘要

以东北填充型烤烟品种“龙江911”为试验材料,通过正交回归田间试验,建立了氮、磷、钾肥与烤烟上部叶片烟碱含量的回归效应模型,并对各因子和交互作用进行了分析,模拟计算得出以降低上部叶片烟碱含量为目标的优化施肥方案.对模型解析表明,随施氮量增加,上部叶片烟碱含量呈先上升后下降趋势;随施磷量增加,烟碱含量呈上升趋势;随施钾量增加,烟碱含量呈急剧下降趋势.双因素效应大小依次为:氮钾>磷钾>氮磷,在一定范围内,氮磷、磷钾与烟碱含量表现为负相关,存在拮抗作用;而氮钾则相反,存在促进作用.对氮、磷、钾肥与烤烟上部叶片烟碱含量模型的综合分析得出:在植烟土壤为河淤土的生产区,烟田的基础施肥量建议为:氮肥33.5~47.8 kg·hm<sup>-2</sup>,磷肥40.2~63.6 kg·hm<sup>-2</sup>,钾肥78.0~119.6 kg·hm<sup>-2</sup>.

**关键词:** 烤烟 烟碱含量 肥料 施肥模型

## Abstract:

An orthogonal regression field experiment was conducted to study the effects of combined fertilization of N, P, and K on the nicotine content in the upper leaves of filling type flue-cured tobacco (*Nicotiana tabacum*) variety “Longjiang 911” from Northeast China. The regression effect models of N, P, and K fertilization rates and upper leaf nicotine content were established, and the effects of the fertilization rates and their interactions were analyzed. Based on these, an optimized NPK fertilization scheme was drawn up to reduce the nicotine content in the upper leaves of “Longjiang 911”. The model analyses showed that the nicotine content in the upper leaves of “Longjiang 911” decreased after an initial increase with the increasing fertilization rate of N, increased with the increasing fertilization rate of P, and had a sharp decrease with the increasing fertilization rate of K. The two-factor effects of NPK on the nicotine content were in the order of NK>PK>NP. Within a certain range of fertilization rates, NP and PK had negative correlations with the nicotine content, suggesting the antagonistic effects between N and P and between P and K, while NK was on the contrary, suggesting the synergistic effects between N and K. A comprehensive analysis on the regression effect models of N, P, and K fertilization rates and upper leaf nicotine content showed that the basal fertilization rates of N, P, and K for the tobacco production on warp soil were recommended as 33.5-47.8 kg·hm<sup>-2</sup>, 40.2-63.6 kg·hm<sup>-2</sup>, and 78.0-119.6 kg·hm<sup>-2</sup>, respectively.

**Key words:** flue-cured tobacco nicotine content fertilizer fertilization model

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