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我国西南烟区典型植烟土壤烤烟氮素的吸收规律

刘青丽[1] 陈 阜[1] 张云贵[2] 李志宏[2,*] 焦永鸽[2] 谷海红[2]

[1]中国农业大学农学与生物技术学院, 北京 100193; [2]中国农业科学院农业资源与农业区划研究所, 北京 100081

摘 要: 通采用 ^{15}N 同位素示踪方法, 研究我国西南烟区典型红壤、黄壤、水稻土烤烟的氮素吸收规律。结果表明, 烤烟氮素的累积与烟叶产量显著正相关, 西南烟区烤烟氮适宜需求量为 60~100 kg hm^{-2}。不同土壤类型上种植的烤烟, 其氮吸收差异显著, 云南红壤烤烟生长前期的氮素吸收速率最高, 其次是水稻土烤烟, 黄壤烤烟最低; 相应氮素吸收高峰分别在移栽后 7、9 和 11 周。烤烟中总氮、土壤氮、肥料氮的吸收速率均呈单峰曲线变化, 且肥料氮的吸收高峰早于土壤氮; 烤烟进入旺长期以后, 土壤氮的吸收速率逐渐高于肥料氮, 转入以吸收土壤氮为主。西南烟区烤烟打顶前土壤氮的累积比例为 59.8%, 肥料氮为 72.1%, 不同土壤类型烤烟打顶前氮素累积比例差异显著, 红壤、黄壤、水稻土烤烟分别为 87.8%、47.3%和 49.2%。因此, 根据不同土壤类型烤烟氮素吸收动态, 在适宜的氮素需求量下, 应以烤烟打顶前氮素需求量和土壤氮素供应量来计算烤烟氮肥需求量。

关键词: 氮素; 烤烟; 黄壤; 红壤; 水稻土

Nitrogen Uptake of Flue-Cured Tobacco in Typical Types of Soil in Southwest China

LIU Qing-Li[1], CHEN Fu[1], ZHANG Yun-Gui[2], LI Zhi-Hong[2,*], JIAO Yong-Ge[2], and GU Hai-Hong[2]

[1] College of Agronomy and Biotechnology, China Agricultural University, Beijing 100193, China; [2] Institute of Agricultural Resource and Agricultural Planning, Chinese Academy of Agricultural Sciences, Beijing 100081, China

Abstract: The aims of this study were to ascertain the difference of nitrogen uptake and verify the absorption law of the nitrogen from soil and fertilizer for tobacco grown in southwest China with red soil, yellow soil, and paddy soil by ^{15}N tracer. The results showed a significant positive correlation between N accumulation amount and yield in flue-cured tobacco, and a suitable nitrogen demand of 60–100 kg ha^{-1} for tobacco in southwest zone. Absorption dynamics of nitrogen were different for flue-cured tobacco planted in various types of soil. For rate of nitrogen absorption before topping, the highest was for the tobacco planted in red soil, followed by that in paddy soil and the lowest was for that in yellow soil. N uptake peaks of tobacco planted in red soil, paddy soil and yellow soil were peaked in 7 weeks, 9 weeks, and 11 weeks after transplanting respectively. The absorption changes of soil nitrogen and fertilizer nitrogen in tobacco all showed a single peak curve, and the peak of the absorption curves of fertilizer nitrogen was earlier than soil nitrogen. Uptake rate of soil nitrogen in flue-cured tobacco was gradually higher than fertilizer nitrogen after starting prosperous growth and transferred to the stage of soil nitrogen-dominated absorption. The accumulation ratios of soil nitrogen and fertilizer nitrogen in tobacco before topping accounted 59.8% and 72.1% respectively. The proportions of N accumulation before topping were 87.8%, 47.3%, and 49.2% for tobacco grown in red soil, yellow soil and paddy soil respectively. In conclusion, the fertilizer N demand for tobacco should be estimated with N requirement and soil N supply before topping under proper N demand according to nitrogen absorption law.

Keywords: Nitrogen; Tobacco (*Nicotiana tabacum* L.); Yellow soil; Red soil; Paddy

烤烟是一种对氮素极其敏感的叶用经济作物, 不适量、不适时的氮素供应将导致烟叶质量下降。了解烤烟对不同来源氮的吸收、利用规律, 确定适宜的氮素施用量、施用时期和施用方法, 对提高烟叶品质十分重要。不同条件下烤烟氮的吸收累积不同, 比较这些差异有利于改进烟田氮素管理措施、

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* 通讯作者(Corresponding author): 李志宏, E-mail: zhli@caas.ac.cn, Tel: 010-82106198

第一作者联系方式: E-mail: lql1000@126.com, Tel: 010-82106198

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