

施用苹果酸对烤烟氮代谢的影响

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Effect of applying malic acid on nitrogen metabolism of flue-cured tobacco

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摘要 选择饼肥发酵产物和烟草中含量较高的苹果酸,研究其对烤烟氮代谢的影响。盆栽试验设置4种浓度的苹果酸溶液处理(g/L):0、1、2、3,分别在移栽后20和40.d灌根。移栽50.d后,各处理取3株进行生理特性和化学成分测定。结果表明,适量的苹果酸促进了土壤氮素的释放,增加烟株氮积累量,一定范围内随着苹果酸用量的增加,根系活力提高,根部氮代谢加强,表现为硝酸还原酶活性增强,硝态氮含量降低,铵态氮含量升高;而氮素在叶部还原量减少,表现为硝态氮含量的减少和硝酸还原酶活性的降低。说明施用苹果酸改变了氮在根部和叶部代谢的状况,使氮在根部还原和同化的比例增加,在叶中还原的比例减小,总体上促进了烤烟氮代谢。

关键词: 苹果酸 氮代谢 烤烟 苹果酸 氮代谢 烤烟

Abstract: A pot experiment was carried out to study the malic acid(0,1,2 and 3g/L) on nitrogen metabolism of flue-cured tobacco seedling after 20 d and 40 d transplantation. Three plants were collected from each treatment to test physiological characters and chemical components after 50 d transplantation. The result showed the appropriate amount of malic acid promoted the release of nitrogen in soil and accelerated the accumulation of nitrogen in plant. The root vitality was increased and nitrogen metabolism was strengthened with the increasing of malic acid concentration in terms of the promoted nitrate reductase activity, reduced content of nitrate nitrogen and the increased of content of ammonium nitrogen in root, while the quantity of nitrogen was reduced in terms of reduction of indicates that nitrate nitrogen and nitrate reductase. We can conclude that applying malic acid altered the status of the nitrogen metabolism in the leaf and root. It could increase the proportion of reduction and assimilation in the root and decrease the proportion of reduction in the leaf. In general, malic acid application promoted the nitrogen metabolism of flue-cured tobacco.

Keywords:

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