

研究报告

日光温室连作土壤酚类物质变化及其对黄瓜根系

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收稿日期 2003-11-18 修回日期 2004-3-26 网络版发布日期 接受日期

摘要

研究了日光温室连作黄瓜土壤酚类物质变化及其对黄瓜根系抗病性相关酶的影响. 结果表明, 随着连作年限的增加, 对羟基苯甲酸、阿魏酸、苯甲酸以及总量呈现明显的积累特征: 种植5年、7年、9年的含量显著高于1年、3年, 且9年的是1年的2倍. 在低浓度处理下(40和80 $\mu\text{g}\cdot\text{g}^{-1}$), 前期(2、3叶期)诱导多酚氧化酶、过氧化物酶、苯丙氨酸转氨酶活性不同程度地升高, 植株表现高抗性, 在较高浓度下(120和160 $\mu\text{g}\cdot\text{g}^{-1}$), 处理前期多酚氧化酶、过氧化物酶、苯丙氨酸转氨酶活性迅速降低, 甚至丧失酶活性. 连作土壤酚类物质浓度变化是影响日光温室黄瓜抗病性的主要因素之一.

关键词 [日光温室; 连作; 酚类物质; 黄瓜; 抗病性相关酶](#)

分类号

Dynamics of soil phenols in continuous cropping solar greenhouse and their effects on disease resistance-related enzyme activities in cucumber root

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Abstract

The study showed that under solar greenhouse condition, the contents of soil p-hydroxybenzoic acid, ferulic acid and benzoic acid and their total amounts increased with increasing continuous cropping years, and were obviously higher after continuously cropped for 5, 7 and 9 years than for 1 and 3 years. Different concentration of soil phenols resulted in completely different effects on disease resistance-related enzyme activities in cucumber root, e.g., under lower concentrations (40 and 80 $\mu\text{g}\cdot\text{g}^{-1}$), the activities of phenylalanine (PAL), polyphenol oxidase (PPO) and peroxidase (POD) were increased, while under higher levels (120 and 160 $\mu\text{g}\cdot\text{g}^{-1}$), they were restrained. Therefore, the changes of soil phenol contents in continuous cropping solar greenhouse could be one of the essential factors affecting the disease-resistance of cucumber.

Key words

[Solar greenhouse](#) [Continuous cropping](#) [Phenols](#) [Cucumber](#) [Disease related resistance](#)

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