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两个彩色棉品种碳氮代谢特征研究

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Characteristics of Carbon and Nitrogen Metabolism in Two Natural Color Cotton Cultivars

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摘要 以棕色棉湘彩棉2号、绿色棉皖棉39、常规白色陆地棉苏棉9号(对照)为材料,在大田栽培条件下分析天然彩色棉的碳、氮代谢特征。结果表明,在氮代谢上,两个天然彩色棉品种盛花期(7月20日)前硝酸还原酶(NR)活性、丙酮酸转氨酶(GPT)活性、全氮含量低于苏棉9号,但在8月15日后高于对照;在碳代谢上,湘彩棉2号、皖棉39功能叶SPAD值、可溶性糖含量、叶片净光合速率(Pn)一直低于苏棉9号。进一步分析可溶性糖含量/全氮含量比值(C/N)发现,湘彩棉2号和皖棉39整个生育期C/N均低于苏棉9号,这不利于其后期生殖器官干物重积累。

关键词: 彩色棉 碳代谢 氮代谢

Abstract: The study was undertaken at Yangzhou University. In the experiment, the brown cotton cultivar (Xiangcaimian 2), green cotton cultivar (Wanmian 39) and white cotton cultivar (Sumian 9) were grown and investigated to study the characteristics of carbon and nitrogen metabolism. The results showed that the activity of nitrate reductase and glutamic-pyruvic transaminase and the content of total nitrogen were lower than those of Sumian 9 before peak flowering period, but higher after peak boll period. However, indexes of the carbon metabolism (SPAD value, the content of soluble sugars, net photosynthetic rate) were always lower than those of white cotton. Further analysis results of ratio of the content of soluble sugars to the content of total nitrogen (C/N) indicated that C/N for Wanmian 39 and Xiangcaimian 2 were lower too, that did not help the dry matter accumulation of reproductive organs.

Keywords: natural color cotton carbon metabolism nitrogen metabolism

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