



### 施氮量对杂交棉干物质积累、分配和氮磷钾吸收、分配与利用的影响

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### Effects of Nitrogen Application Rate on Dry Matter Accumulation and N, P, K Uptake and Distribution in Different Organs and Utilization of Hybrid Cotton under High-yield Cultivated Condition

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摘要

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**摘要** 在高产条件下,研究了施氮0、75、150、225、300和375 kg·hm<sup>-2</sup>对杂交棉干物质积累、分配和氮、磷、钾的吸收、分配与利用的影响,结果表明:施氮量与杂交棉的干物质和氮、磷、钾的积累间均表现显著正相关,增施氮肥促进了杂交棉的干物质和氮、磷、钾的积累,但是当施氮量增加到300 kg·hm<sup>-2</sup>后,促进效果不显著。施氮量与各器官干物质、氮、磷、钾的分配比例关系:与叶片呈显著或极显著正相关,在棉花生育中期与茎呈负相关,生育后期呈正相关,在棉花生育中期与蕾、花、铃呈显著正相关,生育后期呈显著负相关。施氮量增加到300 kg·hm<sup>-2</sup>后,棉花生育后期干物质和氮磷钾在生殖器官的分配比例明显下降,在茎叶的分配比例明显提高,表现营养生长过旺。氮积累和分配与磷、钾积累和分配间表现很好的正相关,从产量水平看,以每公顷施氮300 kg的子棉产量最高,比施氮225 kg的增产1.66%,增产不显著。施氮量达375 kg·hm<sup>-2</sup>时,子棉产量比300 kg·hm<sup>-2</sup>的减产3.92%、比225 kg·hm<sup>-2</sup>减产2.23%。随施氮量增加,氮肥利用率明显下降,而磷和钾的利用率提高。

**关键词:** 杂交棉 施氮量 干物质 积累 分配

**Abstract:** Nitrogen application rates of 0, 75, 150, 225, 300 and 375 kg·hm<sup>-2</sup> on dry matter accumulation and distribution as well as the N, P, K uptake and utilization of hybrid cotton were studied under high yield conditions. The results showed that the nitrogen utilization and dry matter content were significantly positive correlated with N, P, K accumulation. The nitrogen can improve the dry matter and N, P, K accumulation. But the effect that applying nitrogen was no longer significant when the nitrogen application rate increased to 300 kg·hm<sup>-2</sup>. The analysis of nitrogen content on dry matter accumulation of different organs indicated that nitrogen content was positive correlated with leaves and negative correlated with stems in the middle stage of cotton growth periods and positive correlated with stems in the latter growth stage. The nitrogen content was positively correlated with cotton bud and flower in the middle growth stage while negative in the latter growth stage. When the nitrogen application rate increased to 300 kg·hm<sup>-2</sup>, nitrogen decreased the proportion of N, P, K and dry matter distributed to reproductive organs and increased the proportion of leaves and stems. The vegetative growth of the hybrid cotton was excessively vigorous. In this experiment, applying the nitrogen of 300 kg·hm<sup>-2</sup> had the highest seed cotton yield which was 1.66% higher than the nitrogen of 225 kg·hm<sup>-2</sup>, but there was no significant difference. When nitrogen rate increased to 375 kg·hm<sup>-2</sup>, the seed cotton yield decreased by 2.23% and 3.92% compared with N 300 kg·hm<sup>-2</sup> and 225 kg·hm<sup>-2</sup>, respectively. The nitrogen utilization decreased distinctly while the phosphorus and potassium utilization increased with the more nitrogen fertilizer added.

**Keywords:** hybrid cotton nitrogen application rate dry matter accumulation distribution

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