

研究论文

# N肥和栽插密度对杂交稻“两优培九”产量及N素吸收利用的影响

郑克武<sup>1</sup>, 邹江石<sup>2</sup>, 吕川根<sup>2</sup>

1.江苏省农业科学院农业资源与环境研究中心, 江苏南京210014 2.江苏省农业科学院粮食作物研究所, 江苏南京210014

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**摘要** 以两系杂交稻两优培九为试材, 研究不同N肥用量(纯N 0、112.5、225.0、337.5 kg/hm<sup>2</sup>)和栽插密度(22.5×10<sup>4</sup>、27.0×10<sup>4</sup>、31.5×10<sup>4</sup>穴/hm<sup>2</sup>)对产量形成及N素吸收利用的影响。结果表明, (1)栽插密度对结实率和千粒重影响较小, 对单位面积穗数和每穗粒数影响较大, 在22.5×10<sup>4</sup>~31.5×10<sup>4</sup>穴/hm<sup>2</sup>的密度范围内, 穗数与每穗粒数之间具有良好的互补性, 因而产量差异未达显著水平。(2)N肥用量对每穗粒数影响较小, 对穗数、结实率和千粒重影响较大, 纯N用量为337.5 kg/hm<sup>2</sup>时, 增穗作用不显著, 反而极显著降低结实率和千粒重, 导致减产。(3)稻株吸N量随供N水平的提高而增加, 但植株含N率和N素累积量过高不利于叶鞘茎中的N素向穗部运转, 降低籽粒N素积累量, 导致结实率和千粒重显著下降而减产。(4)在中等肥力土壤上, 施纯N 225.0 kg/hm<sup>2</sup>, 栽插密度22.5×10<sup>4</sup>穴/hm<sup>2</sup>, 高峰苗控制在500.0万/hm<sup>2</sup>左右, 有利于两优培九抽穗前茎鞘叶N素积累和抽穗后向穗部运转, 能较好地协调穗数、结实率和千粒重的关系而获得高产。

**关键词** [氮肥](#) [两系杂交稻](#) [产量](#) [氮素吸收利用](#)

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## Effects of Transplanting Density and Nitrogen Fertilizer on Yield Formation and N Absorption in a Two-line Intersubspecific Hybrid Rice “Liangyoupeijiu”

ZHENG Ke-Wu<sup>1</sup>, ZOU Jiang-Shi<sup>2</sup>, LÜ, Chuan-Gen<sup>2</sup>

1.Center of Agricultural Resource and Environment, Jiangsu Academy of Agricultural Sciences, Nanjing 210014, Jiangsu; 2.Institute of Food Crops, Jiangsu Academy of Agricultural Sciences, Nanjing 210014, Jiangsu, China

**Abstract** A field experiment was conducted with different transplanting densities (22.5×10<sup>4</sup>, 27×10<sup>4</sup>, 31.5×10<sup>4</sup> hole/ha) and nitrogen fertilizer rates (0, 112.5, 225.0, 337.5 kg/ha) using an intersubspecific hybrid rice, Liangyoupeijiu. The main results were as follows: (1) Influence of transplanting density on panicle per unit area and grain number per panicle was higher than that on seed-setting rate and 1000-grain weight. There was no significant difference in yield between treatments with transplanting densities ranging from 22.5×10<sup>4</sup> to 31.5×10<sup>4</sup> holes per hectare. (2) Effect of nitrogen fertilizer on grain number per panicle was lower than that on panicle number, seed-setting rate and 1000-grain weight. Seed-setting rate and 1000-grain weight were decreased significantly in the treatment with 337.5 kg/ha nitrogen fertilizer. (3) The amount of N-uptake was increased with the increment of nitrogen fertilizer rate. But excessive N-content and nitrogen accumulation were not of benefit to the transfer of nitrogen from vegetative organs (leaf, sheath and stem) to panicle, resulting in the reduction of N-accumulation amount in seeds, seed-setting percentage, 1000-grain weight and yield. (4) The better N accumulation of stem, sheath and leaf before heading, the better N transfer of nitrogen from stem, sheath and leaf to panicle after heading, the better coordinate relationship among panicle number, seed setting rate and 1000-grain weight and higher yield would be obtained under medium-fertility field with nitrogen application of 225.0 kg/ha, transplanting density of 22.5×10<sup>4</sup> hole/ha and high peak seedlings of 500.0×10<sup>4</sup>/ha.

**Key words** [Nitrogen fertilizer](#) [Two-line intersubspecific hybrid rice](#) [Yield](#) [N-uptake and use efficiency](#)

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