

**氮、磷、钾对湿害胁迫下甘蓝型油菜产量的影响**丛野<sup>1</sup>, 李艳君<sup>2</sup>, 周灿金<sup>2</sup>, 邹崇顺<sup>1</sup>, 张学昆<sup>1\*</sup>, 廖星<sup>1\*</sup>, 张春雷<sup>1</sup>

1 中国农业科学院油料作物研究所, 湖北武汉430062; 2 武穴市大金镇农技推广服务中心, 湖北武穴435400

Effect of application of nitrogen, phosphorus and potassium fertilizers on yield in rapeseed (*Brassica napus* L.) under the waterlogging stressCONG Ye<sup>1</sup>, LI Yan-Jun<sup>2</sup>, ZHOU Can-Jin<sup>2</sup>, ZOU Chong-Shun<sup>1</sup>, ZHANG Xue-Kun<sup>1\*</sup>, LIAO Xing<sup>1\*</sup>, ZHANG Chun-Lei<sup>1\*</sup>

1 Oil Crops Research Institute, Chinese Academy of Agriculture Science, Wuhan 430062, China;

2 Agricultural Extension Services Centre of Dajin Town, Wuxue, Hubei 435400, China

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**摘要** 对甘蓝型油菜品种中双10号和中油杂5号苗期进行水淹处理模拟湿害胁迫, 运用“3414”肥料效应田间试验方案, 研究湿害胁迫下施肥量对油菜产量的影响。结果看出, 施氮磷钾肥对湿害胁迫下的油菜产量性状有重要影响。灰色关联分析表明, 施氮量与每角粒数、单株角果数和一次分枝数、二次分枝数和主花序长呈显著正相关; 施磷量与单株角果数和每角粒数呈显著正相关; 施钾量与每角粒数、千粒重和主花序长有呈显著正相关的趋势。湿害胁迫下, 保证中等水平的磷肥和钾肥, 增施氮肥可显著提高油菜的单产、投产比和经济效益。通过建立肥效与产量间的效应函数方程, 在湿害危害严重的油菜种植地区, 适宜肥料用量为: N 267 kg/hm<sup>2</sup>、P<sub>2</sub>O<sub>5</sub> 120 kg/hm<sup>2</sup>、K<sub>2</sub>O 120 kg/hm<sup>2</sup>。

**关键词:** 油菜 氮磷钾肥 湿害 “3414”试验方案 灰色关联分析 产量 油菜 氮磷钾肥 湿害 “3414”试验方案 灰色关联分析 产量

Abstract:

Two rapeseed (*Brassica napus* L.) varieties (Zhongshuang No.10 and Zhongyouza No.5) were used to study the effects of application of nitrogen (N), phosphorus (P) and potassium (K) fertilizers on yield in rapeseed under the waterlogging stress. The plant was submerged at the seedling stage to mimic the condition of waterlogging. The experiment was replicated two times with “3414” design. The results showed that N, P and K fertilization significantly affected yield traits in rapeseed under the waterlogging stress. The grey relational analysis showed that N application rate was positively correlated with the number of seed per pod, siliques per plant, primary branches, secondary branches and the length of raceme. The P application rate was positive correlated with the number of siliques per plant and seed per pod. And K application rate was positive correlated with the number of seed per pod, 1000-seed weight and the length of raceme. The results indicated that the ensuring middle level of P and K fertilization, enhanced nitrogen fertilization can significantly increase the yield of rapeseed and the cost value ratio and economic benefits under waterlogging stress. By establishing the fertilizer response equations, the optimum fertilizer applicant of rapeseed under the waterlogging stress were as N 267 kg/ha, P<sub>2</sub>O<sub>5</sub> 120 kg/ha, K<sub>2</sub>O 120 kg/ha.

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