

优化施氮下稻-麦轮作体系土壤N₂O排放研究梁国庆¹, 周卫¹, 夏文建¹, 王秀斌¹, 孙静文¹, 李双来², 胡诚², 陈云峰²¹中国农业科学院农业资源与农业区划研究所, 农业部植物营养与养分循环重点开放实验室, 北京100081; ²湖北省农业科学院植保土肥所, 武汉430064Effect of optimized nitrogen application on N₂O emission from paddy field under wheat-rice rotation systemLIANG Guo-qing¹, ZHOU Wei¹, XIA Wen-jian¹, WANG Xiu-bin¹, SUN Jing-wen¹, LI Shuang-lai², HU Cheng², CHEN Yun-feng^{2*}¹ Institute of Agricultural Resources and Regional Planning, CAAS/ Key Lab of Crop Nutrition and Fertilizer Science, MOA, Beijing 100081, China; ² Institute of Plant Protection, Soil and Fertilizer, Hubei Academy of Agricultural Sciences, Wuhan 430064, China[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(961KB\)](#) [HTML 1KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 采用了静态箱法研究优化施氮下湖北稻-麦轮作体系农田N₂O排放特征。结果表明, 农田N₂O排放量随施氮量增加而增加。N₂O排放通量峰值大约发生在施氮后的第3~7 d。小麦季土壤N₂O排放量范围为N₂O 2.43~4.84 kg/hm², 肥料氮通过N₂O排放的损失率为0.54%~0.74%。水稻季土壤N₂O排放量为N₂O 0.89~2.45 kg/hm², 肥料氮通过N₂O排放的损失率为0.39%~0.47%。小麦季和水稻季施氮后0~15 d N₂O排放量占当季总排放量的百分比分别为62.79%~66.72%和87.97%~93.14%。与习惯施氮相比, 基于作物阶段氮素吸收增加追肥比例和施氮次数的优化施氮能有效减少土壤N₂O排放。

关键词: 稻-麦轮作 N₂O排放 水稻土 优化施氮

Abstract: The static chamber-gas chromatograph method was used to measure the N₂O emission from paddy field under the wheat-rice rotation system in Hubei Province. The results indicated that total N₂O emission generally increased with the N application rate. The peak of N₂O flux occurred within 3-7 days after fertilizer was applied. In wheat growing season, N₂O emission varied from 2.43 to 4.84 kg/ha N₂O which accounted for 0.54% to 0.74% of applied N; While in rice growing season, N₂O emission varied from 0.89 to 2.45 kg/ha N₂O which ranged from 0.39% to 0.47% of applied N. Majority of total N₂O emission occurred over the first 15 days after N application, ranged from 62.79% to 66.72% and 87.97% to 93.14% in the wheat season and rice season respectively. Compared to farmer practice, optimizing N application associated with increasing ratios of dress N to base N fertilizer and times of split application based on plant N requirement at different growth stage could obviously reduce the N₂O emission under the rice-wheat rotation system.

Keywords: wheat-rice rotation system N₂O emission paddy soil optimizing N application

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