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不同灌期对农田氮素迁移及面源污染产生的影响

Effect of different irrigation seasons on the transport of N in different types farmlands and the agricultural no-point pollution production

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英文关键词: [irrigation](#) [Nitrogen](#) [water pollution](#) [hetao irrigation district](#) [farmlands](#) [non-point pollution](#)

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中文摘要:

通过分析从秋灌到秋浇后河套灌区乌拉特灌域典型区不同类型土壤剖面(0~160 cm)、浅层地下水中和沟道中氮素质量分数的变化过程,以便为灌区氮素污染控制提供相应的理论指导。研究表明:秋灌期深层土壤剖面(120~160 cm)中NO₃-N累积不明显,秋浇后3种类型土壤剖面(80~160 cm)中NO₃-N平均质量分数分别增加了1.25、2.72和2.89 mg/kg。土壤剖面中的NH₄-N质量分数分布相对较均匀。3种耕地土壤剖面中NO₃-N和NH₄-N质量分数的变化具有季节性的增高或降低。盐荒地土壤剖面中NO₃-N和NH₄-N都处于积累状态,对整个灌区农业面源污染物的排泄有减缓作用。浅层地下水中NO₃-N和NH₄-N质量分数在秋浇期的增幅大于秋灌期。农田土壤、浅层地下水和沟道中的氮素质量分数有着较好的时间相关性,秋浇期河套灌区土壤中NO₃-N最易发生淋洗,且是灌区产生农业面源污染最严重的时期。

英文摘要:

Through the analysis of the transport of N in the groundwater, ditch and soil profile during the period from the first-autumn irrigation to the second-autumn irrigation in Wulate irrigation region in Hetao Irrigation District Inner Mongolia, and the law of the agricultural non-point pollution production was analyzed so as to provide the corresponding theoretical guidance of the control of nitrogen pollution in Hetao Irrigation District. The study results shows that the accumulation of NO₃-N in the deeper soil profile (120-160 cm) was not significantly during the first-autumn irrigation period. The NO₃-N content were increased by 1.25、2.72 and 2.89 mg/kg in the three farmland soil profiles (80~160 cm) respectively after the second-autumn irrigation period. The NH₄-N distributions were relatively homogeneous from surface to deep of soil profile. The change law of the NO₃-N and NH₄-N content in the three type soil profiles were increased or reduced seasonally. The content of NO₃-N and NH₄-N in the groundwater in the second-autumn irrigation period were higher than that of the first-autumn irrigation period. The second-autumn irrigation period was the key stages which produced the agricultural non-point pollution in Hetao Irrigation District. The NO₃-N and NH₄-N were accumulated in the soil profile of salt wasteland, which was helpful to reduced the amount of the agricultural non-point pollutant discharge.

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