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灌溉对大麦/玉米带田土壤硝态氮累积和淋失的影响

Effect of irrigation on soil NO^-_3-N accumulation and leaching in maize/barley intercropping field

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英文关键词：NO^-_3-N; leaching; N fertilizer application; irrigation; barley/maize intercropping field

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中文摘要：

以甘肃省河西走廊灌区为试验地点，分别在0、150、300 kg/hm^{2}氮水平和816、1632 m^3/hm^{2}灌水量下，对3次灌水前、后大麦/玉米带田0～200 cm土壤NO^-_3-N含量变化和灌水后135 cm处渗漏液NO^-_3-N浓度进行了测定。结果表明：灌水明显影响土壤硝态氮累积量，随灌水次数增加，土壤硝态氮累积量降低，而且在高灌水条件下土壤硝态氮累积量变化比低灌水量时大。从渗漏液硝态氮浓度来看，大麦带和玉米带都是以第1次灌水最高，浓度分别为8.04～17.21和3.30～14.57 mg/L。3次灌水土壤硝态氮淋失量，玉米带以N 150 kg/hm^{2}和灌水量1632 m^3/hm^{2}最高，平均为4.31 kg/hm^2；大麦带以N 150 kg/hm^{2}及灌水量1632 m^3/hm^{2}和N 150 kg/hm^{2}及灌水量816 m^3/hm^{2}比较高，平均为6.82 kg/hm^2。

英文摘要：

Before and after each irrigation, NO^-_3-N concentration in 0～200 cm soil and 135 cm deep leachate of maize/barley intercropping was determined in Hexi corridor of Gansu Province, with three rates of nitrogen application(0, 150, 300 kg/hm^2), two rates of irrigation level (816, 1632 m^3/hm^2). The results showed that irrigation obviously affected soil NO^-_3-N accumulation, and it reduced with the increase of irrigation times. In comparison with lower irrigation level, high rate irrigation accelerated NO^-_3-N reduction. NO^-_3-N concentrations in leachate from both barley and maize strip at first irrigation were the highest, they reached 8.04～17.21 mg/L and 3.30～14.57 mg/L, respectively. After three times irrigations, NO^-_3-N leachate in maize strip was the highest with the treatment that the level of N fertilizer application was 150 kg/hm^2 and irrigation quantity was 1632 m^3/hm^2, with average content reaching 4.31 kg/hm^2. NO^-_3-N leachates in barley strip were higher with treatment that the level of N fertilizer application was 150 kg/hm^2 and irrigation quantity was 1632 m^3/hm^2 and treatment that the level of N fertilizer application was 150 kg/hm^2 and irrgation quantity was 816 m^3/hm^2, respectively, with average content reaching 6.82 kg/hm^2.

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