交替隔沟灌溉水分入渗规律及其对作物水分利用的影响

Irrigation Water Infiltration in Furrows and Crop Water Use of Alternative Furrow Irrigation

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中文摘要：

以玉米为试验材料,通过大田灌水技术和灌溉制度试验对交替隔沟灌溉水分入渗规律及其对作物水分利用的影响进行了研究。结果表明,交替隔沟灌溉与常规灌溉相比,水分的侧向入渗比较明显,由于其湿润锋到达深度小于常规灌溉,因此,交替隔沟灌溉可以减少土壤水分的深层渗漏;交替隔沟灌溉不降低光合速率而蒸腾速率有所下降,并有利于提高蒸腾效率;在同等灌水量水平下,交替隔沟灌溉因为其低蒸腾和较高产量总水分利用率和灌溉水利用效率均高于常规灌溉;在同等灌水量水平下,采用交替隔沟灌溉不降低玉米产量;收获等产量的玉米,交替隔沟灌溉比常规灌溉省水33.3%。

英文摘要：

A new method of irrigation was designed and tested for its water infiltration and crop water use in the field where maize were grown. Results showed that to compare with conventional furrow irrigation(CFI), lateral infiltration of alternative furrow irrigation(AFI)is more obvious. Due to its wet front depth is less than CFI, it can decrease water deep percolation. AFI can not decrease photosynthesis rate but it can decrease evaportranspiration rate and is helpful to increase evaportranspiration efficiency. For the same irrigation water use, total water use efficiency and irrigation water use efficiency were all more than CFI. And Under the same irrigation water use, AFI can not decrease maize yield. To gain same yield, AFI need less water than CFI, its water saving efficiency is 33.3%.

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