沟灌夏玉米棵间土壤蒸发规律的试验研究

Experiment on soil evaporation of summer maize under furrow irrigation condition

投稿时间：2004-12-8　　最后修改时间：2005-4-3

稿件编号：20051105

中文关键词：沟灌； 夏玉米； 土壤蒸发

英文关键词：furrow irrigation; summer maize; soil evaporation

基金项目：国家科技部863计划项目(2002AA2Z4031)

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中文摘要：

棵间土壤蒸发是农田土壤耗水的重要组成部分。该文采用两种规格的微型棵间蒸发皿(Micro-Lysimeter)分别测定沟灌夏玉米田沟、垄土面蒸发量，并对沟灌条件下夏玉米棵间土壤蒸发与作物蒸腾变化规律进行了试验研究，分析了相对棵间土壤蒸发强度与土壤含水率的关系以及棵间土壤蒸发强度与作物叶面积指数的关系。结果表明，沟灌条件下夏玉米棵间土壤蒸发量占全生育总耗水量的33.06%～34.35%，棵间土壤相对蒸发强度与表层土壤含水率和作物叶面积指数之间均呈现良好的指数函数关系，灌溉或降雨后2～3 d内土壤蒸发强度较大，受大气蒸发力影响明显。因此，在不影响作物蒸腾的条件下减少表层土壤的湿润面积和湿润次数是减少棵间土壤蒸发、提高作物水分利用效率的主要技术途径与措施。

英文摘要：

Soil evaporation is an important component of water consumption in farmland. In this paper, the soil evaporation in field ditch and on ridge was measured by using two kinds of micro-lysimeters respectively, the change law of soil evaporation and crop transpiration in summer maize under furrow irrigation was studied, and the relationship between relative soil evaporation intensity and soil water content as well as the relationship between soil evaporation intensity and leaf area index was analyzed. The results showed that soil evaporation in summer maize field under furrow irrigation condition accounted for 33.06%～34.35% of water consumption in the whole growth period, and there was a good exponential function relationship between relative soil evaporation intensity and surface soil water content as well as leaf area index. Soil evaporation intensity was comparatively great within 2～3 days after an irrigation or rainfall, and it was influenced by atmosphere evaporation intensity obviously. Therefore, to reduce wetting area and wetting times of surface soil is the major technical way and measure to decrease soil evaporation and to raise crop water use efficiency if crop transpiration is not influenced.

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