

研究报告

半干旱区不同垄沟集雨种植马铃薯模式对土壤蒸发的影响

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摘要 通过垄沟集雨种植马铃薯试验, 研究了不同垄沟集雨种植模式对土壤蒸发的影响. 结果表明, 在马铃薯全生育期, 垄上覆盖塑料薄膜(CR)处理土壤蒸发量为122.9~165 mm, 垄上原土夯实不覆膜(UR)处理土壤蒸发量为90.9~101.2 mm, 无垄带状种植(CK)土壤蒸发量为80.7 mm. 其中, 覆膜垄处理CR₆₀在马铃薯成熟期土壤蒸发强度最大, 达2.6 mm·d⁻¹, 平均为1.46 mm·d⁻¹, 而对照的土壤蒸发强度为0.65 mm·d⁻¹; 不覆膜土垄处理(UR₃₀)土壤蒸发强度苗期最小, 只有0.2 mm·d⁻¹, 平均为0.39 mm·d⁻¹, 而对照的土壤蒸发强度为0.58 mm·d⁻¹. 在马铃薯生长的现蕾期和开花期, 水面蒸发量最大, 日平均水面蒸发量分别为8.3和9.0 mm, 与土壤蒸发不同步. 马铃薯成熟期, 各处理行间土壤蒸发量都达到最大值. 覆膜垄蒸发量最大, 集雨效果显著, 所以应采取抑制土壤蒸发措施, 以便进一步提高水分利用效率.

关键词 [半干旱区](#) [垄沟种植](#) [集雨](#) [土壤蒸发](#) [马铃薯](#)

分类号

Effects of different ridge-furrow planting patterns of potato on soil evaporation in semiarid area.

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Abstract

This paper studied the soil evaporation in potato field in semi-arid area under effects of covering ridge with plastic film (CR), uncovering ridge but compacted (UR), and belt planting on flat soil without ridge (CK). The results showed that in the whole growth season of potato, soil evaporation was 122.9-165 mm, 90.9-101.2 mm, and 80.7 mm under CR, UR, and CK, respectively. Treatment CR₆₀ had the maximum soil evaporation (2.6 mm·d⁻¹) at maturing stage, with a mean of 1.46 mm·d⁻¹, while the soil evaporation in CK was 0.65 mm·d⁻¹. In treatment UR₃₀, soil evaporation was the minimum (0.2 mm·d⁻¹) at seedling stage, with a mean of 0.39 mm·d⁻¹, while CK was 0.58 mm·d⁻¹. However, water surface evaporation was the maximum at budding and flowering stages, with the daily average evaporation being 8.3 mm and 9.0 mm, respectively, and not in-phase with soil evaporation. At maturing stage, soil evaporation was the maximum in all treatments. It was suggested that covered ridge had high efficiency of rainfall harvesting, but owing to its maximum soil evaporation, measures should be taken to inhibit soil evaporation to increase water use efficiency.

Key words [semiarid area](#) [ridge-furrow planting](#) [rainwater harvesting](#) [soil evaporation](#) [potato](#)

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