

秸秆覆盖条件下微咸水灌溉棉花试验研究

Irrigation With Brackish Water Under Straw Mulching

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中文摘要:

我国是一个淡水资源短缺的国家, 开发利用微咸水资源是缓解我国北方地区水资源供需矛盾的一条重要途径。该试验在麦秸覆盖条件下, 研究了不同矿化度的微咸水灌溉对土壤和棉花生长的影响。结果表明, 不论是淡水(CK)灌溉还是微咸水灌溉都会使得土壤盐分有所增加, 而微咸水灌溉会对棉花的早期生长起到一定的抑制作用; 但是, 秸秆覆盖减少了土面蒸发, 具有很好的保墒效果, 而且明显抑制了微咸水灌溉后土壤盐分的表聚作用, 从而减轻了微咸水灌溉对棉花生长的不良影响。因此, 在旱季可以利用2~5 g/L的微咸水直接灌溉棉花, 不会使土壤含盐量超过棉花的耐盐度。如果结合秸秆覆盖, 微咸水灌溉对土壤和棉花的不良影响均无明显影响。这为微咸水资源的开发利用提供了理论和实践依据。

英文摘要:

China is a country with shortage of fresh water resources, and the exploitation of brackish water is an important way which can mitigate the contradiction between water supply and demand in the north of China. The effects of the irrigation with fresh and brackish water on soil and the growth of cotton were studied under wheat straw mulching. The results showed that soil salt content could increase after irrigated and the growth of cotton was restrained to some extent when irrigated with brackish water. Wheat straw mulching can effectively decrease soil surface evaporation and conserve soil moisture. Moreover, wheat straw mulching can effectively restrain soil surface salification caused by irrigation with brackish water and mitigating the negative effect of irrigation with brackish water on the growth of cotton. Therefore, in dry seasons the brackish water resources with mineral concentration between 2~5 g/L can directly be used to irrigate cotton and soil salt content would not exceed the tolerance of salinity of cotton. Under wheat straw mulching, the negative effects of irrigation with brackish water on soil and cotton can be reduced obviously.

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