

残茬覆盖与耕作方式对土壤性状及夏玉米水分利用效率的影响

Effects of stubble mulch and tillage managements on soil physical properties and water use efficiency of summer maize

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中文摘要:

采用田间和小面积模拟降水试验的方法, 对小麦机械收获后残茬覆盖与不覆盖两种条件下免耕、翻耕和间隔深松3种土壤耕作方式夏玉米田的土壤物理性状和水分利用效率进行了研究。结果表明, 残茬覆盖与深松相结合, 可平衡和改善耕层土壤温度状况, 在土壤温度较低时具有保温作用, 在土壤温度较高时具有降温作用; 可以增加土壤的蓄水和保水能力, 模拟降水后24 h测定1 m土层含水量比免耕不盖多26.1 mm, 全生育期平均耕层土壤含水量比免耕不覆盖高9.37%; 土壤通透性也得到改善; 最终水分利用效率比免耕不盖提高25.26%。

英文摘要:

Field experiment on soil physical properties and water use efficiency of summer maize in three kinds tillage management of no tillage, moldboard plowing and subsoiling under two conditions of stubble mulch and no mulch with field and simulated rain fall methods have been conducted. Stubble mulch combined with subsoiling could balance and improve the status of soil temperature through the function of heat preservation on lower soil temperature condition and decrease the temperature at higher soil temperature. It could also increase the ability of water storing and preserving. After 24 hours of simulated rain fall, one meter deep soil water content was 26.1 mm more than that of the treatment of no mulch combined with no tillage, and plowing layer soil moisture was 9.73% higher than that of the treatment of no mulch combined with no tillage in whole growth duration. The soil density properties could be improved, and the whole water use efficiency was increased by 25.26% finally.

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