

## 保护性耕作对黄土高原南部地区小麦产量及土壤理化性质影响

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## Effect of conservation tillage on wheat yield and soil physicochemical properties in the south of Loess Plateau

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摘要

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**摘要** 以1992年设置于山西省临汾市尧都区的保护性耕作试验基地为基础,研究了长期保护性耕作对旱地小麦产量、土壤理化性质及剖面水分含量的影响。结果表明,11年免耕覆盖和15年免耕覆盖分别比传统耕作平均增产19.2%和27.6%;丰水年份增产率为5.2%和11.7%,而干旱年份增产率高达85.0%和97.6%,表现为实施保护性耕作年限越长、越是干旱,保护性耕作的增产效果越显著。保护性耕作能降低土壤容重,增加土壤孔隙度,提高土壤剖面水分含量和土壤贮水量,提高表层0—10 cm土壤有机质、碱解氮和速效钾含量,但不利于有效磷含量的提高。11年免耕覆盖和15年免耕覆盖,表层0—10 cm土壤有效磷含量比传统耕作降低6.8%和6.3 mg/kg,降低了56.1%和51.9%,应注意磷肥的施用。

**关键词:** 保护性耕作 黄土高原 旱地 土壤理化性质 小麦产量

**Abstract:** On basis of the long term conservation tillage experiment located in Yaodu Distract, Linfen City of Shanxi Province from 1992, effects of the conservation tillage on wheat yield of rainfed land, soil physicochemical properties and soil water storage were studied. The results show that compared with traditional cultivation (TC), the average yields of wheat are increased by 19.2% and 27.6% in the 11yearno tillage land with stubble incorporating treatment (11y-NTS) and the 15yearno tillage land with stubble incorporating (15y-NTS) respectively, and the yields are increased by 5.2% and 11.7% in abundant precipitation year, while the yields are increased by 85.0% and 97.6% in dryyear. These results indicate that the effects of the conservation tillage on wheat yield are increased with the decrease of annual precipitation and the prolongation of implementing time; Soil bulk density is decreased, and soil total porosity, soil water content and water storage in the whole soil profile are increased under the conservation tillage. The contents of soil organic matter, alkali-hydro N and available K in 0-10 cm soil layer are increased under the conservation tillage as well. However, the conservation tillage is not favor for the increase of available P, the contents of available P are decreased by 6.8 mg/kg and 6.3 mg/kg in the treatments of 11y-NTS and 15y-NTS, decreasing 56.1% and 51.9%, respectively, thus it is necessary to fertilize P properly.

**Keywords:** conservation tillage soil physicochemical properties wheat yield rainfed land South of Loess Plateau

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