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渭北旱塬不同秸秆覆盖量对土壤水分和春玉米产量的影响

Effects of different rates of straw mulch on soil moisture and yield of spring maize in Weibei Highland area of China

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中文关键词: [土壤](#) [含水率](#) [秸秆](#) [覆盖量](#) [渭北旱塬](#) [春玉米](#) [产量](#)

英文关键词: [soils](#) [moisture](#) [straw](#) [mulch rates](#) [Weibei Highland](#) [spring maize](#) [yield](#)

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中文摘要:

为了探明不同秸秆覆盖量对渭北旱塬土壤水分及春玉米产量的影响,于2008—2009年在陕西合阳县旱农试验站进行了3个水平的秸秆覆盖量(4 500、9 000和13 500 kg/hm²)试验,以不覆盖为对照(CK)。2 a结果表明,3个处理0~200 cm土层平均土壤贮水量较CK均显著提高,分别增加16.52、25.52和34.04 mm(P<0.05);播后0~60 d,农田蒸散量较CK分别减少4.43、8.23(P<0.05)和6.96 mm(P<0.05);9 000 kg/hm²处理2年平均籽粒产量及水分利用效率表现最优,较CK分别提高11.03%(P<0.05)和9.25%(P<0.05),13 500 kg/hm²处理次之,4 500 kg/hm²处理最差。本研究表明,渭北旱塬春玉米生育期降水量低于390 mm时,不同秸秆覆盖量处理蓄水保墒及增产效应明显,且以9 000 kg/hm²覆盖量为宜。

英文摘要:

A field experiment (2008 - 2009) was conducted at the Heyang Dryland Farming Experimental Station in Shaanxi Province of China to determine the effects of straw mulch rates on soil moisture and spring maize (*Zea mays* L.) yield. Maize straw at rates of 0 (CK), 4 500, 9 000 and 13 500 kg/hm² was placed on field plots. The results indicated that the average soil water storage in the 0 - 200 cm soil layers under the three different rates of straw mulch were 16.52, 25.52 and 34.04 mm, respectively, significantly (P<0.05) higher than that of CK, and the average field evapotranspiration (ET) in the 0 - 200 cm soil layers were 4.43, 8.23 and 6.96 mm, respectively, significantly (P<0.05) lower than that of CK during 0 - 60 days after sowing. Besides, the average grain yield and water use efficiency (WUE) of the treatment with 9 000 kg/hm² of straw mulch were optimal among the treatments, its grain yield and WUE increased by 11.03% (P<0.05) and 9.25% (P<0.05) compared with the CK, while it was medium with the treatment of 13 000 kg/hm², and lowest with the treatment with 4 500 kg/hm². It is suggested that the treatment with 9 000 kg/hm² of straw mulch is preferable for Weibei highland area in China, as the precipitation is below than 390 mm during the maize growing season.

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