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### 灌溉频率对冬小麦产量及叶片水分利用效率的影响

#### Effect of irrigation frequency on yield and leaf water use efficiency of winter wheat

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中文关键词: [灌溉](#) [试验](#) [水分](#) [冬小麦](#) [叶片水分利用效率](#) [产量](#)

英文关键词: [irrigation](#) [experiments](#) [water](#) [winter wheat](#) [leaf water use efficiency](#) [grain yield](#)

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中文摘要:

为了探讨中国北方冬小麦高效节水灌溉模式,采用了3种灌溉处理:在拔节期一次灌溉120 mm,在拔节期和抽穗期各灌溉60 mm及在拔节期、抽穗期和灌浆期各灌溉40 mm,研究了在总灌溉量为120 mm的情况下,灌溉频率对冬小麦产量及叶片水分利用效率的影响。结果表明,在冬小麦的拔节期和抽穗期各灌溉60 mm,显著提高乳熟期和蜡熟期旗叶的净光合速率和蒸腾速率;在拔节期和抽穗期各灌溉60 mm,显著提高了乳熟期和蜡熟期旗叶的水分利用效率。结果表明,以拔节期和抽穗期各灌溉60 mm处理的籽粒产量最高,增产的原因在于穗数的显著增加。综合考虑冬小麦的产量和水分利用效率,在总灌溉量为120 mm的情况下,以拔节期和抽穗期各灌溉60 mm为宜。

英文摘要:

In order to investigate the optimal water-saving and high-efficient irrigation pattern of winter wheat in North China, 3 irrigation treatments, irrigating 120 mm only at jointing stage, irrigating 60 mm each at jointing and heading stages, and irrigating 40 mm each at jointing, heading, and milking stages were conducted to study the effect of irrigation frequency on yield and leaf water use efficiency of winter wheat in Huabei Plain of North China. The results showed that under the condition of irrigating 120 mm during the growing season of winter wheat, the treatment which irrigated 60 mm at jointing and heading stages, respectively, the net photosynthesis rate and transpiration rate of winter wheat flag leaves significantly increased at milky stage and dough stage. With irrigating 60 mm at jointing and heading stages, respectively, the water use efficiency in flag leaves was significantly improved at milky and dough stages. The results indicated that irrigating 60 mm at jointing and heading stages during the winter wheat growing season, grain yield was the highest, which can be attributed to increased spike number. Under the condition of irrigation amount 120 mm at the growing season of winter wheat in North China, it was suggested that winter wheat should be irrigated 60 mm at jointing and heading stages to achieve reasonable water use efficiency and grain yield.

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