

不同氮效率基因型冬小麦生理特征的比较研究

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Comparative study on physiological characteristics in winter wheat with different nitrogen use efficiency

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摘要 采用田间小区试验, 通过对两个不同氮效率基因型冬小麦小偃22 (XY22) 和小偃6号(XY6)产量和构成因素, 氮素吸收利用效率以及关键生育期的硝酸还原酶、叶水势、叶绿素含量等生理指标测定, 探讨了其对氮素利用的差异及其机理。结果表明, 不施氮处理, 子粒产量、硝酸还原酶活性、叶水势、叶绿素含量明显降低, 而施氮后明显提高; 氮素吸收利用效率、叶水势、叶绿素含量在施N 150 kg/hm²时保持在较高水平。两个基因型中, 小偃22比小偃6号的生理代谢更加旺盛, 施氮加强了这种作用, 这可为进一步选育氮高效利用型小麦品种提供科学依据。

关键词: 冬小麦基因型 氮效率 产量 生理特征

Abstract: A field plot experiment was conducted to study the physiological characteristic of winter wheat with different nitrogen use efficiency Xiaoyan 22 (XY22) and Xiaoyan 6 (XY6) by measuring yield, yield components and nitrate reductase enzyme activity, leaf water potential and chlorophyll content at different key stages. The results showed that the yield, nitrate reductase enzyme activity, leaf water potential and chlorophyll content were reduced significantly under no nitrogen application. But under the condition of nitrogen application, they were significantly increased. Leaf water potential and chlorophyll content of winter wheat leaf could be kept at high level with N 150 kg/ha application. Comparing two type genotypes, the physiological activity of XY22 was more exuberant than XY6, nitrogen application strengthened this function furthermore. These results will provide the scientific basis for further selecting and breeding the genotypes with higher nitrogen use efficiency.

Keywords: winter wheat genotypes nitrogen use efficiency yield physiological characteristic

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