

喷灌对冬小麦植株氮素积累运转及籽粒蛋白质含量的影响

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Effects of sprinkler irrigation on the plant nitrogen accumulation and translocation and kernel protein content of winter wheat.

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摘要

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摘要

以百农矮抗58为试验材料, 以地面灌溉为对照, 采用大田试验的方法, 研究了喷灌对冬小麦植株氮素积累运转及蛋白质含量的影响. 结果表明: 拔节期喷灌条件下冬小麦植株氮素积累量与地面灌溉条件下相比没有显著差异; 孕穗期至成熟期, 喷灌条件下冬小麦植株氮素积累量显著高于地面灌溉条件. 喷灌条件下叶片、茎鞘、颖壳开花前贮藏氮素的运转量和对籽粒氮素的贡献率均大于地面灌溉条件; 而开花后同化氮素对籽粒的贡献率较地面灌溉条件降低. 喷灌条件下冬小麦籽粒的蛋白质含量和蛋白质产量较地面灌溉条件显著提高. 表明喷灌可明显调节冬小麦氮素物质运转和籽粒蛋白质积累.

关键词: 喷灌 冬小麦 氮素 积累 运转

Abstract:

Taking wheat cultivar Bainong AK58 as test material, a field experiment was conducted to study the plant nitrogen accumulation and translocation and kernel protein content of winter wheat under sprinkler irrigation and surface irrigation, aimed to understand the differences in the nitrogen metabolism characteristics of winter wheat under different irrigation regimes. At booting stage, no significant difference was observed in the total amount of plant nitrogen accumulation between sprinkler irrigation and surface irrigation; while from booting stage to maturing stage, the total amount of plant nitrogen accumulation under sprinkler irrigation was significantly higher. Under sprinkler irrigation, the translocation amount and contribution rate of the nitrogen stored in leaf, glume, stem and sheath at pre-anthesis to the kernel increased, while the contribution rate of the assimilated nitrogen after anthesis to the kernel nitrogen declined. Both the relative protein content and the total protein yield in the kernel increased significantly under sprinkler irrigation. In conclusion, sprinkler irrigation could significantly regulate the nitrogen translocation and kernel protein accumulation of winter wheat.

Key words:

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[1] 赵焱, 姚霞, 田永超, 刘小军, 曹卫星, 朱艳^{**}. 基于临界氮浓度的小麦地上部氮亏缺模型[J]. 应用生态学报, 2012, 23(11): 3141-3148.

[2] 徐海成, 尹燕桦, 蔡铁, 倪英丽, 杨卫兵, 彭佃亮, 杨东清, 王振林^{**}. 冬小麦拔节期不同茎蘖对低温胁迫的反应及抗冻性评价[J]. 应用生态学报, 2013, 24(8): 2197-2204.

[3] 满建国, 王东^{**}, 于振文, 张永丽, 石玉. 不同带长微喷带灌溉对土壤水分分布与冬小麦耗水特性及产量的影响[J]. 应用生态学报, 2013, 24(8): 2186-2196.

[4] 刘赵帆¹, 张国斌¹, 郁继华^{1**}, 杨海兴², 师桂英¹, 马彦霞¹, 李杰¹. 氮肥形态及配比对花椰菜产量、品质和养分吸收的影响[J]. 应用生态学报, 2013, 24(7): 1923-1930.

[5] 黄晶^{1,2,3}, 高菊生^{2,3**}, 张杨珠¹, 秦道珠^{2,3}, 徐明岗². 长期不同施肥下水稻产量及土壤有机质和氮素养分的变化特征[J]. 应用生态学报, 2013, 24(7): 1889-1894.

[6] 董浩^{1,2}, 陈雨海^{2**}, 周勋波². 灌溉和种植方式对冬小麦耗水特性及干物质生产的影响 [J]. 应用生态学报, 2013, 24(7): 1871-1878.

[7] 俞斌, 夏会龙^{**}. 添加茶籽粕和EDTA对土壤中镍和锌形态变化及植物有效性的影响[J]. 应用生态学报, 2013, 24(6): 1615-1620.

[8] 易立攀¹, 于振文¹, 张永丽^{1**}, 王东¹, 石玉¹, 赵俊晖². 不同土层测墒补灌对冬小麦耗水特性及产量的影响[J]. 应用生态学报, 2013, 24(5): 1361-1366.

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- [9] 王丙文^{1,2},迟淑筠^{1,2**},田慎重^{1,2},宁堂原^{1,2},韩惠芳^{1,2},赵红香^{1,2},李增嘉^{1,2}. 不同玉米秸秆还田方式对冬小麦田土壤呼吸的影响[J]. 应用生态学报, 2013, 24(5): 1374-1380.
- [10] 陈卫平^{**},吕斯丹,王美娥,焦文涛. 再生水回灌对地下水水质影响研究进展[J]. 应用生态学报, 2013, 24(5): 1253-1262.
- [11] 栗丽¹,洪坚平^{1**},王宏庭²,谢英荷¹,张璐¹. 水氮处理对冬小麦生长、产量和水氮利用效率的影响[J]. 应用生态学报, 2013, 24(5): 1367-1373.
- [12] 张晓萍¹,杨慎骄²,张笑培²,白芳芳²,王和洲^{2**}. 不同播期冬小麦株型构建及其生育特征[J]. 应用生态学报, 2013, 24(4): 915-920.
- [13] 朱秋莲^{1,2,3},邢肖毅^{1,3},程曼^{1,3},薛志婧^{1,3},安韶山^{1,3**}. 宁南山区典型植物根际与非根际土壤碳、氮形态[J]. 应用生态学报, 2013, 24(4): 983-988.
- [14] 常旭虹¹,赵广才^{1**},杨玉双¹,丰明¹,马少康¹,王德梅¹,毕玉强²,杨素荣². 我国农牧交错区耕作方式与施氮量对小麦氮素利用的影响[J]. 应用生态学报, 2013, 24(4): 995-1000.
- [15] 陈晓光¹,史春余²,李洪民^{1**},张爱君¹,史新敏¹,唐忠厚¹,魏猛¹. 施钾时期对食用甘薯光合特性和块根淀粉积累的影响[J]. 应用生态学报, 2013, 24(3): 759-763.