

苗期土壤含水率变化对冬小麦根、冠生物量累积动态的影响

Influence of different soil water in seedling stage on root and shoot biomass accumulation of winter wheat

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中文摘要:

为合理进行冬小麦生长过程的适时水分调控, 该文对不同生育期土壤含水率对冬小麦根冠影响的试验进行分析。采用的试验包括5种水分处理, 即苗期充分供水, 其它生育期进行中度胁迫(FB)、重度胁迫(FC)处理和从苗期开始的中度水分胁迫(SB)、重度水分胁迫(SC)处理以及全生育期充分供水的对照处理。试验结果表明: 苗期土壤含水率对冬小麦根、冠的生物量, 生物量的累积速率产生不同影响, 使全生育期内根、冠占植株总量的比例和根冠比发生改变。当苗期水分改变时, 生育初期, 根、冠均没有明显响应, 但到播后16 d, 播后20 d, 根、冠生物量分别随胁迫程度的增加而减小(FB>SB, FC>SC); 在播后28 d, SB和SC的根系质量累积速率超过对应FB和FC处理, 且苗期受胁迫处理的冬小麦在生殖生长阶段所维持的根系大于苗期不受胁迫处理的根系; 冠的累积速率则在播后28 d和35 d也出现SB>FB, SC>FC的结果, 到播后42 d, SB、SC的冠质量分别超过对应的FB、FC的冠质量。在此过程中, 根、冠生物量占总质量的比例发生改变, 根表现为SB>FB, SC>FC; 冠在营养生长阶段FB>SB, FC>SC, 在生殖生长期SB达到最大; 相应根冠比改变。

英文摘要:

An experiment was designed to find the influence of soil water in seedling stage on root and shoot of winter wheat. The experiment consists of 5 water treatments, including mild stress treatment (SB) and severe stress (SC) since three-leaf stage, mild stress treatment (FB) and severe stress (FC) treatment since seedling stage. The results show that root and shoot of winter wheat in all treatments are not susceptible to different water in early seedling stage. After sowing 16 days, weight of root and weight of shoot decrease with reducing of soil water. As for growing rate of every day, root growth rate of SB treatment and that of SC treatment are superior to that of FB treatment and that of FC treatment after planting 20 days and 28 days; While shoot growth rate of SB treatment and SC treatment are larger than that of FB treatment and FC treatment after planting 28 days and 35 days; after 42 days, shoot weights of SB treatment and SC treatment are larger than that of FB treatment and FC treatment. During winter wheat growing period, ratio of root weight to total weight in SB treatment and SC treatment is bigger than that of FB treatment and FC treatment; however, that of shoot has same result only in reproductive stage. The maximum ratio of root to shoot of SB treatment is reached at reproductive growth stage.

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