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农学—研究报告

三种草坪草种子萌发对水分的响应

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摘要:

种子吸收一定量的水分后能够正常发芽，在这个过程中，种子将消耗外部环境的水分，这种改变将影响种子对水分的吸收，并最终导致种子的发芽率不同。试验以三种草坪草为研究对象，通过限定灌水量来模拟地下滴灌方式，讨论了10个水分梯度下种子吸胀吸水和萌发的变化情况。结果表明，在灌水量不同的情况下，萌发前外部环境水分变化率差异显著，但当灌水量超过60%时，差异不显著；种子开始萌发后，萌发初期种子发芽较快，然后逐渐变慢，最终达到稳定状态，当灌水量达到一定值时，累计发芽率达到最大值，但当水分含量超过这一定值时，反而会抑制种子的发芽，其中多年生黑麦草种子对水分最敏感，能最快达到最大发芽率，而草地早熟禾对水分反应不敏感，则最慢达到最大发芽率。研究结果可用于描述种子发芽过程中外部水分变化与发芽率的关系，并有助于种子发芽最优水量的确定和提高水分的利用效率。

关键词: 草坪草种子

Response of Seed Germination to Water Content for Three Turfgrasses

Abstract:

Seeds can normal germinate when absorb a certain amount of water for some time. In this process, seeds will consume external water, and then the changes will affect the seeds on the rate of water absorption, which final leads to the difference of seed germination rate. Taking three turfgrass as the objects, this study simulated subsurface drip irrigation by limiting the irrigation quantity, which discussed the changes of seed imbibition and germination under 10 water gradients. Results showed that the processes of seed germination were rapid in the initial stage and slow in the later stage, then stable in the end. When irrigation quantity increased to a certain extent, the cumulative germination rate could achieve the maximum value, but when exceeded this boundary, it would inhibit the seed germination. Among the three turfgrasses, perennial ryegrass was most sensitive to water, so its cumulative seed germination rate firstly reaches steady state, while Kentucky bluegrass was the slowest. The result could describe the relationship between external water variation and germination rate in the process of germination and contributed to estimate the optimal water of seed germination and improved water use efficiency.

Keywords: turfgrass seed

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