

土壤水分和光照对西葫芦生长和生理特性的影响

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摘要 null

关键词: 西葫芦 土壤水分 遮光 生理特性

Abstract:

A pot experiment with artificial shading was conducted to study the effects of soil moisture content and light intensity on the plant growth and leaf physiological characteristics of squash variety "Jingyingyihao". Under all test soil moisture conditions, 30% shading promoted the growth of "Jingyingyihao", with the highest yield at 70%-80% soil relative moisture contents. 70% shading inhibited plant growth severely, only flowering and not bearing fruits, no economic yield produced. In all treatments, there was a similar water consumption trend, *i.e.*, both the daily and the total water consumption decreased with increasing shading and decreasing soil moisture content. Among all treatments, 30% shading and 70%-80% soil relative moisture contents had the highest water use efficiency ($2.36 \text{ kg} \cdot \text{mm}^{-1} \cdot \text{hm}^{-2}$) and water output rate ($1.57 \text{ kg} \cdot \text{mm}^{-1} \cdot \text{hm}^{-2}$). The net photosynthetic rate, transpiration rate, stomatal conductance, and chlorophyll content of squash leaves decreased with increasing shading, whereas the intercellular CO_2 concentration was in adverse. The leaf protective enzyme activity and proline content decreased with increasing shading, and the leaf MAD content decreased in the order of 70% shading, natural radiation, and 30% shading. Under the three light intensities, the change characteristics of squash leaf photosynthesis, protective enzyme activity, and proline and MAD contents differed with the increase of soil relative moisture content.

Key words: squash soil moisture shading physiological characteristics

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