

## 遮阴对夏玉米干物质积累及养分吸收的影响

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## Effects of shading on dry matter accumulation and nutrient absorption of summer maize.

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摘要

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摘要

以振杰2号(ZJ2)、登海605(DH605)和郑单958(ZD958)为试验材料,在大田条件下设置花粒期遮阴(S<sub>1</sub>)、穗期遮阴(S<sub>2</sub>)、全生育期遮阴(S<sub>3</sub>)3个遮阴处理,以自然光照条件为对照(CK),研究了遮阴对夏玉米干物质积累和氮、磷、钾吸收的影响.结果表明:遮阴后夏玉米籽粒产量和单株干物质积累量显著降低,降低程度与遮阴时期有关,表现为S<sub>3</sub>>S<sub>1</sub>>S<sub>2</sub>,其中S<sub>1</sub>、S<sub>2</sub>和S<sub>3</sub>籽粒产量平均降低61.6%、25.3%和92.8%,说明花粒期遮阴较花前遮阴对夏玉米干物质积累和籽粒产量影响更大,不同品种的变化趋势相同.夏玉米植株花前养分吸收量表现为钾>氮>磷,植株吸收总量表现为氮>钾>磷.遮阴后植株氮和磷积累量显著减少,由于遮阴后干物质较对照降低程度大于对氮、磷吸收的降低程度,各处理氮、磷相对含量有所升高;遮阴后各处理植株钾吸收量较对照显著降低,但S<sub>2</sub>处理的钾吸收降低程度大于干物质积累降低程度,钾相对含量降低,即花前遮阴对玉米钾吸收的影响大于氮和磷.

关键词: 遮阴 夏玉米 干物质积累 养分吸收 氮 磷 钾

Abstract:

Taking summer maize cultivars Zhenjie 2 (ZJ2), Denghai 605 (DH605), and Zhengdan 958 (ZD958) as test materials, a field trial was conducted to study the effects of shading on the dry matter accumulation and nitrogen (N), phosphorus (P) and potassium (K) absorption of summer maize. Four treatments were installed, *i.e.*, shading from flowering stage to maturity stage (S<sub>1</sub>), shading from six leaf stage to flowering stage (S<sub>2</sub>), shading all through the growth season (S<sub>3</sub>), and no shading (CK). After shading, the grain yield and dry matter accumulation decreased significantly, and the decrement was related to shading period, showing S<sub>3</sub>>S<sub>1</sub>>S<sub>2</sub>. The grain yield in treatments S<sub>1</sub>, S<sub>2</sub>, and S<sub>3</sub> was averagely 61.6%, 25.3%, and 92.8% lower than that of CK, respectively, indicating that the effects of shading after flowering were greater than those of shading before flowering. The responses of different cultivars to shading presented a similar trend. The nutrient absorption of summer maize before flowering stage showed K>N>P, and the nutrient absorption amount of whole plant showed N>K>P. After shading, the N and P absorption decreased significantly. The plant relative N and P absorption in different treatments had somewhat increase, because the decrement of dry matter accumulation after shading was larger than that of N and P absorption, as compared with the control. After shading, the plant K absorption decreased significantly, and the decrement in S<sub>2</sub> was larger than that of dry matter accumulation. Shading before flowering stage had larger effects on the plant K absorption than on the N and P absorption.

Key words: shading summer maize dry matter accumulation nutrient absorption nitrogen phosphorus potassium.

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