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## 草甘膦对抗草甘膦大豆光合特性日变化的影响

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摘要: 在大田条件下,采用随机区组设计,研究了不同用量草甘膦对抗草甘膦大豆(RR1)光合特性日变化的影响。结果表明:(1)在未喷施草甘膦情况下,抗草甘膦大豆(RR1)的净光合速率(Pn)、蒸腾速率(Tr)和气孔导度(Gs)日变化均呈单峰曲线,峰值分别出现在10:00、12:00和10:00。RR1叶片叶绿素含量指数(CCI)的日变化呈先降低后升高趋势,14:00左右最低。水分利用效率(WUE)和胞间CO<sub>2</sub>浓度(Ci)随着时间的推移均呈波浪式变化,WUE在6:00、10:00和16:00有3个小峰,而Ci在6:00最高。(2)喷施草甘膦后,RR1光合特性的日变化趋势总体与未喷药前相似。Pn和CCI随草甘膦用量的增加呈降低趋势;但当草甘膦用量大于4.48 L·hm<sup>-2</sup>时,CCI和Pn显著下降。12:00以前(包含12:00),除低用量(1.12 L·hm<sup>-2</sup>)的草甘膦促进RR1的Gs外,各用量抑制了RR1的Tr和Gs;而12:00以后,草甘膦却促进了RR1的Tr和Gs。草甘膦增加了RR1的Ci,而大于2.24 L·hm<sup>-2</sup>的草甘膦却降低了RR1的WUE。表明光强和草甘膦会影响大豆的光合特性和叶绿素含量。

Abstract: Random complete block design was used to research the different dosages of glyphosate on diurnal variation of photosynthetic characteristics in leaves of glyphosate-resistant soybean (RR1) in the field. The results showed that: (1) The trend of diurnal variation of net photosynthetic rate (Pn), transpiration rate (Tr) and stomatal conductance (Gs) in RR1 leaves showed a single peak curve, the peak appeared at about 10:00, 12:00 and 10:00, respectively. Chlorophyll content index (CCI) declined until 14:00, then increased. The water use efficiency (WUE) and intercellular CO<sub>2</sub> concentration (Ci) of RR1 changed like wave as time went on. WUE appeared three peaks at 6:00, 10:00 and 16:00, respectively, while the highest Ci was appeared at 6:00. (2) The trend of diurnal variation of photosynthetic characteristics in RR1 leaves treated with glyphosate was similar with the control. Pn and CCI decreased with increasing of glyphosate dosage, but only dropped significantly when glyphosate dose > 4.48 L·hm<sup>-2</sup>. Glyphosate dose at 1.12 L·hm<sup>-2</sup> promoted Gs of RR1, while the others inhibited Tr and Gs before 12:00 (including 12:00). Glyphosate increased Tr and Gs of RR1 after 12:00. Ci of RR1 increased with increasing of glyphosate dosage, and glyphosate > 2.24 L·hm<sup>-2</sup> reduced WUE of RR1. Results suggest photosynthetic characteristics and chlorophyll content of RR1 leaves are affected by photosynthetic active radiation and glyphosate.

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