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摘要: 研究大气O₃浓度升高对大豆光合作用及籽粒产量的影响,利用开顶式气室对大豆进行熏蒸,测定大豆叶片净光合速率、气孔导度等光合指标,以及大豆叶片的Chla、Chlb、Chl(a+b)及Chla/b值。结果表明:在整个生育期中,与对照相比,高浓度O₃(110 nmol·mol⁻¹)熏蒸下,大豆叶片Pn呈极显著下降(P<0.01),Gs、Ci、Tr均先增高后降低,叶绿素含量下降。大豆百粒重下降不显著(P>0.05),而单株荚数、单株粒重和单株粒数下降达极显著水平(P<0.01)。说明大气O₃浓度升高对大豆植株具有伤害作用,通过减弱叶片光合作用强度,减少大豆开花数量、阻碍花粉受精过程,从而降低大豆产量。

Abstract: In recent years, the elevated ozone has some significant effects on plant photosynthesis, respiration, water availability and so on. In this paper, the effects of the elevated ozone concentrations on soybean photosynthesis and yield were studied in use of open-top chambers. Photosynthetic traits of Pn, Gs, Ci, Tr and contents of Chla, Chlb, Chl(a+b) and Chla/b were determined. The results showed that Pn reduced significantly (P<0.01), Gs, Ci and Transcended firstly and declined following, the contents of Chla, Chlb, Chl(a+b) and Chla/b of soybean leaves under elevated ozone (110 nmol·mol⁻¹) were lower than that of control. The decrease of 100-seed weight of soybean was not significant (P>0.05), but the decrease of grain weight per plant and grains per plant was significant (P<0.01). It indicates that elevated ozone has more negative influence to the soybean, which reduces the soybean photosynthesis intensity and the amount of flowers and inhibits the process of pollen fertilization, thus reduces the yield on soybean

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