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研究论文

不同品种大豆(*Glycine max* L.)对中国菟丝子(*Cuscuta chinensis*)寄生的生理生态响应

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摘要 田间条件下观察了中国菟丝子危害14个大豆品种的差异，随后选择受中国菟丝子危害差异显著的3个品种与中国菟丝子混种，探讨田间条件下中国菟丝子危害这3个品种大豆植株的生理生态效应。实验显示：在寄生关系确立前，受危害重的大豆品种植株的光合色素含量和净光合速率、总黄酮和植株全氮的含量比受危害轻的品种高，而可溶性糖的含量则相反。在寄生关系确立后，危害重的品种植株光合色素含量和净光合速率、总黄酮和植株全氮的含量下降，可溶性糖含量则是危害程度愈重，升幅愈大。在相同栽培条件下，中国菟丝子生物量为：危害重的大豆植株＞危害轻的大豆品种植株，同时受危害重的大豆品种植株的生物量下降也大，但中国菟丝子生物量与寄生大豆植株生物量下降量的百分比为：受危害重的品种＜受危害轻的品种。结果表明：中国菟丝子在大豆品种间的寄生差异与大豆品种光合作用、次生代谢、同化物质合成和氮含量指标的变化有关，受中国菟丝子影响后大豆品种间的这些生理指标的差异进一步扩大。

关键词 中国菟丝子；大豆；寄生关系；生物量；生理生态效应

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Eco-physiological characteristics response of different soybean (*Glycine max* L.)cultivars to dodder (*Cuscuta chinensis*) parasitizing

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Abstract In order to clarify interactions between parasitic weed dodder (*Cuscuta chinensis*) and soybean (*Glycine max* L.), the degrade of damage caused by dodder parasitizing and related ecovphysiological response of soybean were evaluated in the fields. The growth of 14 soybean cultivars was investigated before and after being parasitized by dodder to estimate the damage degree, and one cultivar in each degree was selected for further determining the eco-physiological response to dodder in comparison with non-parasitized (CK). The result demonstrated that like the non-parasitized soybean, both growth and damage degree of soybean under parasitized with dodder were varied with the cultivars. Plants with high concentration of photosynthetic pigments, flavones, total N, and the higher net photosynthetic rate, were more easily parasitized and damaged with dodder, whereas the contents of soluble sugar were lowered. After soybean was parasitized with dodder, the trends of these index was adverse. These eco-physiological indexes were significantly varied with degree of soybean parasitized with dodder. The biomass of dodder parasitized in the severe damaged soybean cultivars were higher than that parasitized in weak damaged ones while the biomass of severe damaged soybean cultivars decreased more than that of weak damaged ones, therefore, the percentage of dodder biomass to the decreased biomass of soybean were higher in the weak damaged soybean cultivars. Both differences in growth differences of soybean cultivars parasitized by dodder and the damage degree of dodder on soybean, were related to photosynthesis, secondary metabolite, the transfer of assimilated products, and the total N content of soybean plants, and these differences became enlarged after being parasitized with dodder.

Key words dodder (Cuscuta chinensis) _ soybean _ parasitized _ biomass _ eco-physiological response

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