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研究论文

不同苜蓿(*Medicago sativa* L.)品种光合速率对光和CO2浓度的响应特征

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摘要 以6个紫花苜蓿(*Medicago sativa* L.)品种为对象，用Licor-6400 型便携式光合作用测定系统测定了紫花苜蓿光合作用对光、CO_2的响应曲线，阐述了光合作用对光和CO_2浓度的响应特征。结果表明，各品种光合速率随光强或CO_2浓度的提高而增大均可用指数方程来模拟，并得出一些光合响应特征参数：表观量子效率、羧化效率、光补偿点、近光饱和点、暗呼吸速率、光呼吸速率、CO_2补偿点、CO_2饱和点等，品种间差异显著；巨人201+Z、路宝具较高的近光饱和点、表观量子效率及羧化效率，较低的CO_2补偿点，是具有较高的光能生产潜力的苜蓿品种；秋眠级数与表观量子效率、羧化效率、光补偿点、近光饱和点、暗呼吸速率、光呼吸速率均成不同程度的负相关，与CO_2补偿点、CO_2饱和点成微弱正相关，均未达到显著水平。

关键词 紫花苜蓿； 响应曲线； 指数方程

分类号 Q142,Q945,Q948

Photosynthesis rate in response to light intensity and CO 2 concentration in different alfalfa varieties

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Abstract

The response of photosynthesis rate to light intensity and CO_2 concenrtration in 6 varieties were measured with Licor-6400 in the sixth year after being planted. The results indicated that exponential equation was fitted for these responses. Characteristic parameters calculated from those exponential equations were found to differ significantly among different varieties. Two of the varieties, Ameristand201+ Z and Lobo, may possess high yield potential as they displayed higher light saturation estimate (*Lk*), apparent quantum yield (*AQY*), carboxylation efficiency(*CE*) and lower CO_2 compensation point(*CCP*), compared with the remaining varieties. Fall dormancy level had negative correlations with *AQY*, *CE*, light compensation point(*LCP*), *Lk*, dark respiration rate(R_d) and photorespiration rate (R_p), while insignificant positive correlation was observed with *CCP* and CO_2 saturation point(*CSP*).

Key words alfalfa; response curves; exponential equations

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