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施钼对不同钼效率冬小麦叶片呼吸作用相关酶的影响

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Effects of molybdenum application on respiration enzymes in vigorous leaves of different Mo efficiency genotypic winter wheat

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摘要 参考文献 相关文章

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摘要 以冬小麦钼高效(97003)和钼低效(97014)品种为供试材料,采用土培方法,研究施钼对冬小麦分蘖期、拔节期、孕穗期和灌浆期功能叶多酚氧化酶(PPO)、抗坏血酸氧化酶(AAO)、乙醇酸氧化酶(GO)等呼吸作用相关酶类活性变化的影响。结果表明,施钼后,PPO活性在4个生育期均降低;AAO活性在分蘖期和拔节期降低,而在孕穗期和灌浆期上升;GO活性则在分蘖期、拔节期和孕穗期降低,而在灌浆期升高。钼对不同钼效率冬小麦叶片呼吸作用酶的影响存在着差异。施钼有利于促进冬小麦分蘖期和拔节期碳水化合物的积累,从而促进生物量的提高,而在孕穗期和灌浆期由于植株生长中心的转移,呼吸作用酶变化复杂。

关键词: 钼 多酚氧化酶 抗坏血酸氧化酶 乙醇酸氧化酶 钼 多酚氧化酶 抗坏血酸氧化酶 乙醇酸氧化酶

Abstract: Effects of molybdenum application on respiration enzymes: polyphenol oxidase(PPO),ascorbic acid oxidase (AAO),glycolic acid oxidase(GO) of vigorous leaves in winter wheat(Mo efficient cv.97003 and Mo inefficient cv.97014) were investigated at tillering stage,jointing stage,heading stage and filling stage.The results indicate that in Mo-treated winter wheat,the activity of PPO decreased in all the four stages;the activity of AAO decreased in the tillering stage and the jointing stage but increased in the heading stage and the filling stage;the activity of GO decreased in the tillering stage,the jointing stage and the heading stage but increased in the filling stage.Differences in responses of activity of molybdenum on respiration enzymes were observed in different molybdenum efficiency winter wheat.Molybdenum application inhibited respiration of winter wheat in the tillering and jointing stage,which was beneficial to carbohydrate accumulation and increased the biologic yield of winter wheat.In the heading and the filling stage,the effect of Mo application on respiration enzymes activity had a big variety.From the tillering stage to the heading stage,the activity of GO decreased when molybdenum was applied,indicating molybdenum application inhibited photorespiration of winter wheat.Therefore,it can increase net photosynthetic rate,and promote carbohydrate accumulation.

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