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研究论文

土壤通气性对马铃薯产量的影响及其生理机制

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摘要 选用克新10号和克新11号马铃薯品种为材料，研究了土壤通气性对马铃薯某些生理特性和块茎产量形成的影响。结果证明，改善土壤通气性，可以增加功能叶片ATP含量，提高功能叶片ATP酶活性；增加块茎中ATP含量和脱落酸（ABA）含量,提高块茎中ATP酶活性。促进14C同化物由叶片向块茎的运输和分配，提高干物质在块茎中的分配率；极显著地提高了块茎的产量。根据植株可溶性碳水化合物的变化，分析了ATP、ATP酶和ABA在促进14C同化物由叶片向块茎运输的作用。

关键词 马铃薯 土壤通气性 块茎产量 生理特性

分类号 S532

Effects of Soil Aeration on Potato Yield and Its Physiological Mechanism

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Abstract The effects of soil aeration on physiological characters and tuberization of potato (Solanum tuberosum L.) cv. Kexin 10 and Kexin 11 were studied. The results showed that the improvement of soil aeration increased the ATP content and promoted the ATPase activity in functional leaves and tubers, and increased the contents of ABA in tubers. The improvement of soil aeration also accelerated the transportation of 14C-photosynthates from leaves to tubers，increased the partition ratio of dry weight to tubers. All these contribute to increase the tuber yield significantly. The role of ATP，ATPase and ABA on accelerating the transportation of 14C-photosynthates was analyzed according to the change of soluble carbonhydrates content in potato plants.

Key words Potato Soil aeration Tuber yield Physiological Characteristics

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