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苹果幼果发育期果柄结构和Ca、Mg、K水平的变化

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Changes of the pedicel structure and Ca, Mg, K levels during apple fruitlet development

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摘要 以"富士"、"金冠"苹果树为试材,分析了同一花序不同部位的果实重量,Ca、Mg、K含量和果柄结构的变化,以期探讨果柄发育和幼果Ca、Mg、K吸收之间的关系及其在幼果脱落中的作用。结果表明,随幼果的发育,单个幼果重量和Ca、Mg、K含量呈增加趋势;与发育不正常的边果相比,发育正常的中心果和边果的鲜重、干重、果柄直径、维管束数目、木质部厚度、韧皮部维管束面积和单果Ca、Mg、K总含量较高,而以干重为单位的果柄Ca、Mg含量较低。相关分析表明,苹果幼果的单果重和Ca、Mg、K含量与果柄的直径、维管束数目、木质部厚度、韧皮部维管束面积呈显著正相关,说明幼果发育与Ca、Mg、K吸收和果柄结构密切相关,Ca、Mg、K吸收率低和果柄发育不良可能是导致落果的重要原因。

关键词： 苹果 幼果 果柄 脱落 Ca Mg K 苹果 幼果 果柄 脱落 Ca Mg K

Abstract： The physiological fruit-drop is an important portion of the yield production in apple. This experiment was performed with "Fuji" and "Golden Delicious" apple trees to investigate the relationships among the fruit development, levels of Ca, Mg and K, pedicel structure of various position in same flower cluster and the physiological fruit-drop. The results showed that the weight and Ca, Mg, K content of single fruitlet increased with the fruit development. Among various fruit-growing positions, compared with the abnormal lateral fruitlets, the normal central and lateral fruitlets had higher fresh weight, dry weight and total Ca, Mg, K content of single fruit, and bigger diameter, more vascular bundles, thicker xylem and bigger phloem vascular bundles area of pedicel,but lower content of Ca, Mg in pedicels. The correlation analysis indicated that the apple fruitlet weight was significantly positively correlated with the total Ca, Mg, K content of single fruitlet,and also with the diameter, number of vascular bundles, xylem thickness and phloem vascular bundles area of pedicel. It is suggested that the fruitlet development was closely related to the uptake of Ca, Mg, K and pedicel structure. The lower rate of uptake for Ca, Mg, K and abnormal development of pedicel mould be an important factor of apple fruit-drop.

Keywords：

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