

外源赤霉素和 AVG 对香榧坐果和果实品质的影响

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摘要: 香榧 (*Torreya grandis* ‘Merrillii’) 是红豆杉科榧属的一种重要经济树种, 其坚果含有丰富的营养成分, 深受消费者喜爱。早期过度落果是香榧产业面临的重大问题, 不同于一般经济作物在某一阶段只存在花内竞争或果内竞争, 香榧在四月时, 花, 一代果, 二代果共生, 存在特殊的花果竞争。目前已经清楚脱落是植物激素, 生理代谢与外部环境高度协调的结果, 植物器官脱落机制主要倾向于碳素营养的供求平衡和激素作用, 乙烯作为一种气态植物激素能够在植物生长发育直至成熟衰老过程中参与一系列的生理生化反应, 如促进发芽、调控幼苗生长、和果实软化等。氨基乙基乙烯基甘氨酸(aminoethoxyvinylglycine, AVG) 被证实能够竞争抑制乙烯的合成。以浙江省杭州市临安区淤潜镇的‘Merrillii’品种为实验试材, 通过在授粉前进行外施植物生长调节剂处理, 分别为清水对照(CK)、200mg·L⁻¹GA₃(T1)、180mg·L⁻¹AVG(T2)、200mg·L⁻¹GA₃+180mg·L⁻¹AVG(T3)探究其如何在授粉前对果实内部营养物质和内源激素进行分配与调控, 以此期望通过植物生长调节剂对香榧在生长发育的关键时期进行合理的养分补充, 以期为外源植物生长调节剂在香榧的生产上提供理论依据, 也为建立香榧高产高效栽培体系提供技术支持。

关键词: 香榧; 营养竞争; AVG; GA₃

The effects of Exogenous Gibberellin and AVG on fruit setting and quality of *Torreya grandis* ‘Merrillii’

Abstract: *Torreya grandis* ‘Merrillii’ is a unique woody nut-tree species in China. In Zhejiang province, it is the economically most important tree species with high ecological benefits. It has dioecious flowers and drupe-like fruits with nut-seeds which take 3 years from blossoming to maturation and develop an attractive flavor and crispy taste with enormous biological functions. Excessive fruit drop is a common problem in *Torreya grandis* growing areas, technical measures to reduce fruit drop and increase yield are badly needed in this industry. In order to alleviate the intense competition for nutrition between flowers and fruits, we used different treatments of spraying phytohormones: T1: Individual application of gibberellic acid (GA₃, 200mgL⁻¹); T2: Individual application of aminoethoxyvinylglycine (AVG, 180 mgL⁻¹); T3: Combined application of GA₃ (200mgL⁻¹) and AVG (180 mgL⁻¹), made uses of the ¹³C-isotope tracer techniques in order to examine the flow of nutrients, hormones and source-sink relationship. With these measurements we aimed to explore the physiological mechanism of fruit drop and its regulation.

Key words: *Torreya grandis* ‘Merrillii’; nutrition competition; GA₃; AVG