

不同外源物质对 10 年生元宝枫种实品质的影响

马秋月¹ 陈梓馨² 李淑顺¹ 孙雪洁² 朱璐¹ 杜一鸣¹ 颜坤元¹ 李淑娴² 李倩中^{1*}

(1. 江苏省农业科学院休闲农业研究所 南京 210014; 2. 南京林业大学 南方现代林业协同创新中心 南京 210037)

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摘要: 喷施不同类型及次数的外源物质, 研究其对 10 年生元宝枫果实形态及营养成分的影响, 以提高元宝枫的果实品质; 通过筛选提高元宝枫果实品质的最佳外源物质喷施类型及次数, 为进一步实现元宝枫提质增效提供理论参考。以 10 年生元宝枫为试材, 于 5 月-8 月按月份喷施不同次数 GA₃ 和果类膨大剂比较分析喷施次数外源物质对 10 年生元宝枫果实品质的影响。结果表明喷施 3 次 GA₃ (24mg/L) 或果类膨大剂 (2g/L) 均可显著增加元宝枫种子横纵径及厚度, 促进元宝枫种仁表型生长; 其中喷施两次果类膨大剂可显著提高元宝枫果实出仁率 (提高 13.83%)。喷施 3 次 GA₃ 种子千粒重增加了 17.926g, 种仁含水率降低 1.41%, 更有利于后期种子的贮藏。此外, 喷施 GA₃ 或果类膨大剂均能提高元宝枫种仁的营养水平, 喷施 3 次果类膨大剂后元宝枫种仁可溶性糖和蛋白质含量分别提高 2.68% 和 26.93mg/g; 喷施两次 GA₃ 后元宝枫种仁可溶性糖和蛋白含量显著提高 3.22% 和 29.09mg/g, 喷施 3 次 GA₃ 后元宝枫种子含油率显著提高 6.16%。喷施两次果类膨大剂后各脂肪酸提高效果明显, 其中硬脂酸 (C18:0)、油酸 (C18:1)、亚麻酸 (C18:3) 和神经酸 (C24:1) 分别提高了 0.61%、2.38%、1.03% 和 1.19%。对 10 年生元宝枫于果实生长发育速生期 5-8 月喷施不同次数的 GA₃ 和果实膨大剂能够促进种仁表型生长、增加种子千粒重, 降低含水率, 提高含油率、脂肪酸组分及可溶性糖和蛋白等营养物质积累, 综合比较来看喷施两次以上的 GA₃ 和果类膨大剂更有助于元宝枫种子的营养物质积累。因此在元宝枫产业实际生产中, 可根据需要喷施适当次数的赤霉素或果类膨大剂以提高元宝枫的果实品质, 本研究的结果为元宝枫低产林改造及提质增效提供了重要技术方法和理论参考。

Effects of different exogenous substances on 10-year seed quality of *Acer truncatum*

Ma-Qiu Yue¹ Chen-Zi Xin² Li-Shu Shun¹ Sun-Xue Jie² Zhu-Lu¹ Du-Yi Ming¹ Yan-Kun Yu an¹ Li-Shu Xian² Li-Qian Zhong^{1*}

(1 Institute of Leisure Agriculture, Jiangsu Academy of Agricultural Sciences, Nanjing, 210014; 2 The Southern Modern Forestry Collaborative Innovation Center, Nanjing Forestry University, Nanjing, 210037)

Abstract: To study the effects of different types and timings of exogenous substances on fruit morphology and nutrient composition of 10-year-old *A. truncatum* in order to improve the fruit quality of *A. truncatum*. The best ways and times of application of exogenous substances to improve the fruit quality of *A. truncatum* were obtained, providing a theoretical reference for further improving the quality and efficiency of *A. truncatum*. The effects of different application times of GA₃ and fruit bulking agent on fruit quality of 10-year-old *A. truncatum* were compared from May to August. The results showed that three sprays of GA₃ (2g/L) or fruit bulking agent (2g/L) could significantly increase the transversal, longitudinal diameter and thickness of the seed and promote the phenotypic growth of the seed kernel. Two sprays of fruit bulking agent could significantly increase fruit yield (13.83%). The 1000 grain weight of GA₃ seeds increased by 17.926 g and the moisture content of the seed kernel decreased by 1.41%, which was more conducive to seed storage at a later stage. In addition, spraying GA₃ or fruit bulking agent could improve the nutritional level of seed kernels, and the content of soluble sugar and soluble protein in seed kernels increased by 2.68% and 26.93 mg/g, respectively, after spraying fruit bulking agent three

times. After two applications of GA₃, the soluble sugar and protein contents of the seed kernel were significantly increased by 3.22% and 29.09 mg/g, respectively, and the oil content of the seed was significantly increased by 6.16% after three applications of GA₃. The content of fatty acids increased significantly after two applications of fruit bulking agent, and the content of stearic acid (C18:0), oleic acid (C18:1), linolenic acid (C18:3) and neric acid (24:1) were increased by 0.61%, 2.38%, 1.03% and 1.19% respectively. The application of GA₃ and fruit bulking agent at different times during the fruit growth period from May to August can promote the growth of the seed kernel phenotype, increase seed 1000 grain weight, reduce water content and improve oil content, fatty acid components, soluble sugars and protein accumulation. The overall comparison showed that spraying GA₃ and fruit bulking agent twice or more was more conducive to the accumulation of nutrients in the seed. Therefore, in the actual production of *A. truncatum* industry, the application of gibberellin or fruit expanding agent at appropriate times can improve the fruit quality of *A. truncatum*. The results of this study provide an important technical method and theoretical reference for the transformation and quality improvement of low yielding *A. truncatum* plantations.