

辐照对鲜食核桃发芽率与胚芽内源激素含量的影响 Effect of Irradiation on Budding Inhibition and Endogenous Hormones Content of Embryo of Fresh Walnut

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关键词: 鲜食核桃 辐照 贮藏 抑芽 内源激素

摘要: 为探讨辐照对鲜核桃的抑芽效果及胚芽内源激素与其萌发的关系,以辽河4号鲜核桃为试材,用不同剂量 $^{60}\text{Co}\gamma$ 射线处理后,研究了常温( $20\pm 3$ ) $^{\circ}\text{C}$ 下和( $0\pm 1$ ) $^{\circ}\text{C}$ 冷藏30d后再于( $27\pm 1$ ) $^{\circ}\text{C}$ 温度下贮藏核桃的发芽率及0、0.1、1.0kGy剂量处理核桃胚芽中内源激素含量的变化规律。结果显示,两种贮藏条件下,对照样品胚芽分别在20d和12d萌发,萌发时内源激素ABA(脱落酸)含量下降,GA3(赤霉素)、IAA(生长素)、ZR(玉米素核苷)含量及 $w(\text{GA3})/w(\text{ABA})$ 、 $w(\text{IAA})/w(\text{ABA})$ 和 $w(\text{ZR})/w(\text{ABA})$ 的比值增加,以对照样品减幅和增幅最大。表明内源激素ABA对鲜核桃胚芽萌发起抑制作用,GA3、IAA和ZR起促进作用;0.05kGy剂量辐照处理即可完全抑制鲜核桃胚芽的萌发。In order to investigate the effect of irradiation on the sprout inhibition and the relationship between endogenous hormones and germination of embryo for fresh walnut, the germination rate and changes of endogenous hormones of embryo for 'Liaoh4' fresh walnut were studied, which were exposed to  $^{60}\text{Co}\gamma$ -radiation at different dose and stored at the room temperature ( $20\pm 3$ ) $^{\circ}\text{C}$  and at the constant temperature ( $27\pm 1$ ) $^{\circ}\text{C}$  after being stored at ( $0\pm 1$ ) $^{\circ}\text{C}$  for 30d. The results showed, at the two storage conditions, the control sprouts at the 20d and 12d respectively, accompanied by ABA content decreased, by the increase of the content of GA3, IAA, ZR and the ratio of  $w(\text{GA3})/w(\text{ABA})$ ,  $w(\text{IAA})/w(\text{ABA})$  and  $w(\text{ZR})/w(\text{ABA})$ , with the largest decreasing and increasing rate against control group. It is proved that endogenous hormone ABA is an inhibitory substance, and GA3, IAA, ZR are stimulative material during the process of germination, the germination of embryo of fresh walnut is completely inhibited with the radiation dose of 0.05kGy.

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