

马惠玲,宋淑亚,马艳萍,刘繁聪,李家政,马昌坤.自发气调包装对核桃青果的保鲜效应[J].农业工程学报,2012,28(2):262-267

自发气调包装对核桃青果的保鲜效应

Effects of modified atmosphere package on preservation of green walnut fruit

投稿时间: 2011-01-24 最后修改时间: 2011-10-14

中文关键词: [贮藏](#),[包装](#),[膜](#),[核桃青果](#),[自发气调](#),[腐烂指数](#)

英文关键词: [storage packaging films](#) [green walnut fruit](#) [MA](#) [rotting index](#)

基金项目:陕西省自然科学基金项目(2011JQ3002);西北农林科技大学专项基金项目

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中文摘要:

该文通过研究自发气调(MA)包装对核桃青果的冷藏效果,为生产上探寻简易、高效的新型核桃保鲜技术提供依据。以辽宁4号核桃青皮果实为材料,裸果为对照,进行了改良聚氯乙烯袋(mPVC)、改良聚乙烯袋(thn-PE、thk-PE)以及1-MCP处理后mPVC包装对青皮核桃0~1℃下的贮藏试验,测定了贮藏过程中袋内气体浓度、果实采后生理和保鲜效果。结果表明,几种包装中thk-PE袋自发气调能力最强,可使袋内O₂和CO₂体积分数分别达到10.1%~13.0%,4.3%~6.5%。贮期核桃青果呼吸强度和乙烯生成量同步出现双峰变化趋势,各MA包装不同程度地延缓了高峰的到来,极显著(P<0.01)降低了呼吸峰值和乙烯生成量,MA功能越强,作用越明显。各处理和对照果实的可溶性固形物含量均呈现先升高后下降的趋势,处理的下降期比对照较早出现。各包装极显著(P<0.01)降低了果实失重率,thk-PE的作用显著(P<0.05)大于其他处理。MA包装也一定程度降低了果实腐烂指数,冷藏66 d和95 d时thk-PE果实腐烂指数分别为30.0%, 68.6%,均极显著(P<0.01)小于其他处理。因此,thk-PE袋被选为适合于核桃青果贮藏的自发气调方式,可使果实冷藏95 d左右坚果保鲜率达到100%,核仁仍新鲜如初。

英文摘要:

In order to provide basis of a new simple effective technology for green walnut fruit storage, the effect of modified atmosphere package on refrigerated storage of the fruit was investigated. Green walnut fruit of variety Liaoning No.4 were stored under 0~1℃ with different packages of plastic film, i.e. improved polyvinyl chloride (mPVC), modified polyethylene (thn-PE, thk-PE) and complex treatment of 1-MCP fumigation plus mPVC to test the effect of modified atmosphere (MA) packages on gas concentrations in each bag, postharvest physiology as well as storability of the fruit. Results showed that among all packages tested thk-PE bags showed strongest MA-effect, which adjusted inner-bag O₂ and CO₂ volume fraction during storage to 10.1%~13.0%, 4.3%~6.5%, respectively. Both the respiration intensity and ethereal production rate of green walnut fruit showed two-peak type trend during the storage. MA package delayed appearance of each peak and significantly (p<0.01) decreased peak values. Soluble solids content of fruit from both treatment and control all increased during early storage phase and then decreased, but the decrease from each treatment occurred earlier than that from control. MA package significantly (p<0.01) reduced fruit weight loss and thk-PE bag had the best effect. MA packages also reduced the decay rate of fruit. Rotting index of fruit in thk-PE bag was 30.0% after 66 days storage and 68.6% after 95 days, which were significant (p<0.01) lower than that in other packages. Therefore, thk-PE bag can be selected as the suitable MA approach for the storage of green walnut fruit, which can keep 100% preservation rate of walnut after a storage period of about 95 days.

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