

研究论文

# 不同材质果袋春夏季节套袋对黄瓜果实发育和品质的影响

程智慧, 赵英, 孟焕文, 关志华

西北农林科技大学园艺学院, 陕西杨凌712100

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**摘要** 以“冬冠3号”黄瓜品种为试材, 于春夏生长季节(4~7月份)在日光温室中研究了白膜袋、鲜膜袋、白纸袋和黄纸袋4种套袋处理对黄瓜果实微环境、果实生长发育和营养品质及农药残留的影响。结果表明: 不论晴天还是阴天, 所有套袋处理的袋内光照强度降低, 相对湿度增大, 温度提高; 白纸袋增温效果最好, 鲜膜袋内相对湿度最高, 黄纸袋内光照最弱。单株单瓜套袋和单株果实连续套袋试验均表明, 套袋后果实鲜重增长加快, 瓜长度增加, 瓜皮色显著变浅。连续套袋后, 单瓜重普遍提高, 大头瓜率降低, 但化瓜率、弯瓜率和尖头瓜率增加; 游离氨基酸含量提高; 维生素C含量无显著变化; 叶绿素和类胡萝卜素的含量普遍降低; 可溶性蛋白质含量白纸袋和鲜膜袋的提高, 黄纸袋和白膜袋的降低, 但与CK间的差异均未达到5%显著水平。套袋可有效降低果实中氧化乐果的残留量, 其中黄纸袋效果最好, 其次为鲜膜袋、白膜袋和白纸袋。综合考虑各指标, 认为春夏季节黄瓜果实套袋栽培应优先选用白纸袋, 鲜膜袋和白膜袋不适宜在该季节使用。

**关键词** [黄瓜](#); [果实套袋](#); [连续套袋](#); [果实发育](#); [微环境](#); [品质](#); [农药残留](#)

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## Effects of fruit bagging with different types of bags on growth and quality of cucumber fruit

CHENG Zhi -Hui , ZHAO Yi ng, MENG Huan -Wen, GUAN Zhi -Hua

College of Horticulture, Northwest A & F University, Yangling, Shaanxi 712100, China

**Abstract** The research of fruit bagging was conducted in a farmer's solar greenhouse in Yangling, Shaanxi Province from April to July 2005 with four different types of bags: the white plastic film bag (WFB), the freshness-keeping plastic film bag (FFB), the white paper bag (WPB) and the yellow paper bag (YPB), in which cucumber fruit of cv. Dongguan No. 3 was bagged. The objectives are first to rate the effectiveness of fruit bagging with different types of bags in controlling the residual chemical pesticides which are now commonly used to control pests in cucumber production, and second to investigate the bio-effects of fruit bagging on fruit growth and quality to evaluate the feasibility of fruit bagging technique in cucumber production. The no-bagging of fruit was taken as the control (CK). Two experiments were carried out in this research, one was to bag only one fruit on a plant (one-fruit-bagging) and the second was to bag all the fruits on a plant (successive-fruit-bagging). The experiments were replicated three times and randomly arranged in the greenhouse. The treatment was conducted by choosing the newly opening female flower, measuring the length of the ovary, artificially pollinating the flower, and then bagging the female flower (young fruit) with a bag. The sample plants were sprayed with the testing pesticide oxidized dimethoate twice. The micro-environment was measured, which include the temperature, the relative humidity (RH) and the light intensity both outside and inside the bag during the period of fruit growing. The sample fruits were harvested to examine fruit morphology, yield, nutritive quality and the residual of the testing pesticide. The results show that on both sunny and cloudy days, light intensity inside all the bags is weakened, while RH and temperature increased. The highest temperature increase is in WPB and the highest RH increase is in FFB. The lowest level of light intensity record is in YPB. Both one-fruit-bagging and the successive-fruit-bagging on a plant show that the fresh weight (FW) growth rate and fruit length are increased by different levels according to different bagging treatments. The color of fruit skin is lightened markedly in all four treatments of both experimen

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ts. With the successive-fruit-bagging, the single fruit weight is generally increased, the rate of big-head fruit is decreased, but the rate of aborted fruit, the rate of crooked fruit and the rate of pointed-head fruit are increased. Compared with the control, the content of free amino acids is increased, the amount of vitamin C is not changed markedly, but the content of chlorophyll and carotenoids are decreased. The content of soluble protein in fruit in WPB and FFB are increased, but reduced in YPB and WFB. There is no marked difference in soluble protein between those treatments and the control. The residual of testing pesticide in the harvested fruit is effectively reduced by all the treatment of fruit bagging. YPB appears to be the best, which reduces the residual by 76.6%. FFB, WFB and WPB decrease the residual by 71.6%, 69.8% and 68.9% respectively. In comprehensive consideration, WPB is recommended first. FFB and WFB are thought not suitable to use in the spring-summer growth season.

**Key words** [cucumber](#) \_ [fruit bagging](#) \_ [successive-fruit-bagging](#) \_ [fruit growth](#) \_ [micro-environment](#) \_ [quality](#) \_ [residual](#) \_ [pesticide](#)

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通讯作者 程智慧 [chengzh@nwsuaf.edu.cn](mailto:chengzh@nwsuaf.edu.cn)