

中熟鲜食黄肉桃新品种豫金蜜3号

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摘 要:豫金蜜3号是以晚熟白肉鲜食桃品种秋蜜红为母本,通过天然杂交选育出的中熟黄肉桃新品种。该品种萌芽率高和成枝力均强,树势旺盛,半开张树姿。花蔷薇型,花粉多,结实力强。果实圆形,两半部较对称,果顶圆凸,缝合线浅。果实大,平均单果质量245 g。果面茸毛稀少,果皮底色浅黄;果肉黄色,硬溶质偏韧,核周围有红色素;果肉细嫩,风味浓甜,香味浓郁;可溶性固形物含量(w,后同)13.9%~16.2%,总糖含量8.2%~10.8%;黏核。在河南郑州地区,8月上旬成熟,果实发育期120 d左右。

关键词:桃;新品种;豫金蜜3号;中熟;黄肉

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A new middle-maturing and yellow-fleshed peach cultivar Yujinmi 3

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Abstract: Peach (*Prunus persica* L.) is one of the most important fruit crops in the world, which is popular by consumers as the flesh is sweet and fruit is covered with excellent color. Yellow-fleshed fruit are rich in carotenoids, which have multiple physiological activities that are beneficial to human health, especially like antioxidation. Therefore, yellow flesh is one of the most important breeding goals in peach. There are many peach varieties in China but most of them are white fleshed, and only a few have yellow flesh. In recent years, yellow-fleshed peach cultivars have been obtained and they have attracted more and more consumers due to requirement of nutrition and health. Yujinmi 3 (YJM3), a new yellow-fleshed peach cultivar, was obtained from a natural cross of Qiumihong (QMH) with late-maturing and white-flesh, which was bred by Henan Agricultural University. Two hundred and ninety-six natural cross fruits were harvested in 2001, and then hybrid seeds were sown into a greenhouse. 156 healthy seedlings were obtained in 2002. Hybrid peach trees began to flower and fruit in 2004, and among them, the fruit of Yunong 01-2-20-6 exhibited yellow flesh, hard melting and excellent flavor by the observation of three consecutive years. The Yunong 01-2-20-6 was selected as an excellent plant in 2006 for further trails. The bud wood of Yunong 01-2-20-6 was grafted onto the wild peach rootstocks (*Amygdalus persica*) and planted in three production areas (Zhengzhou, Nanyang and Xinyang city) in Henan province for variety comparison and regional trails. QMH and Huangjinmi 3 (HJM3) were served as the control. All testing peach trees were planted by 3 m between trees and 5 m between rows under normal management conditions. After 5 years of observation (2014—2019), it was concluded that the characteristics of YJM3 were obviously different from the female parent QMH and HJM3. The full bloom date

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of YJM3 is early-April, similar with QMH and HJM3. The flowers of YJM3 are showy and have fertile pollen. The average ripening date of YJM3 is early August, about 120 d after full bloom, which is similar with HJM3 (about 5 d earlier), but 40 d earlier than QMH. The fruit is oval in shape, yellow ground color, almost no hair on the skin, clingstone and easy peeling at mature stage. The average fruit weight is 245 g, and the maximum fruit could be up to 322 g. The flesh is yellow and hard melting. The contents of vitamin C, total sugars and soluble solids contents in the mature fruit are $7.2 \text{ mg} \cdot 100 \text{ g}^{-1}$, 8.2%–10.8% and 13.9%–16.2%, respectively. The vitamin C and total sugars contents are similar with HJM and QML, while soluble solids content is between HJM and QMH. The total acid content is 0.26, similar with HJM3 and QML. To identify the difference between YJM3 and QMH at the molecular level, 12 SSR primers were used, and among them, eight primers showed a same band, while four primers were different, indicating that YJM3 and QMH showed an obvious difference due to male genotype. Based on comprehensive excellent performance, YJM3 was certified by the Evaluation Committee of Henan Province in 2019 and was suggested to be suitable for cultivation in Henan province.

Key words: Peach; New cultivar; Yujinmi 3; Medium maturing; Yellow flesh

桃原产于中国,是中国最重要的水果之一,深受消费者喜欢。类胡萝卜素作为重要的次生代谢物,不仅具有多方面的生理活性,也赋予桃果实黄肉的颜色品质,但中国主栽鲜食桃中,黄肉品种较少,限制了中国桃产业发展。在中国育种早期,罐头和加工制品较多,所以黄肉桃是主要的育种方向之一。目前中国桃市场鲜食桃主要以白肉桃为主,近年来随着市场和消费需求的改变,消费者对黄肉鲜食桃的需求逐渐增多,一些黄肉鲜食桃新品种陆续进入市场,如黄水蜜^[1]、锦园^[2]、黄金蜜桃1号^[3]、黄金蜜桃3号^[4]和豫金蜜1号^[5]等。针对消费者反馈和市场需求,河南农业大学桃生物学与种质创新团队于2000年提出了培育“适宜于河南地区栽培的风味纯甜、香气浓郁的不同成熟期鲜食黄肉桃品种”的育种目标。

1 选育过程

2001年以河南农业大学选育的晚熟鲜食白肉桃品种秋蜜红^[6]为母本,通过天然杂交收获杂交果实296个,取出种子并清洗干净后晾干,4℃条件下冷藏层积。2002年4月采用0.5 m × 1.0 m的株行距将209株实生苗假植于河南农业大学试验站,共得到生长健壮的杂种实生苗156株。2002年12月15日以3.0 m × 4.0 m的株行距将实生苗定植到杂种园中,进行常规管理。

2004年杂种单株全部开花。经3 a(年)果实性状的初步鉴定,编号豫农01-2-20-6被初选为优良单株,此单株果实成熟期在8月5日左右,果肉黄色、细腻、硬溶质偏韧、耐贮运且浓甜有香味,被复选为优

良单株。2006年12月将50株豫农01-2-20-6的芽苗定植于郑州须水镇孙庄果园、新乡市原阳县和南阳市社旗县,以母本秋蜜红和成熟期相近的黄金蜜桃3号为对照,进行品种比较试验。植株结果后,连续3 a进行田间观察和果实品质鉴定,结果表明,豫农01-2-20-6有花粉,自花结实率高,丰产稳产性好;平均单果质量245 g,与对照黄金蜜桃3号相似而低于母本秋蜜红;果实成熟期在8月5日左右,较对照黄金蜜桃3号晚10 d左右,较母本秋蜜红早40 d左右;果肉黄色、肉质细腻,硬溶质偏韧;果面金黄色、茸毛稀少、充分成熟时果面着红色;黏核,耐贮运。

该品系于2019年12月通过河南省林木品种审定委员会审定(良种证编号:豫S-SV-AP-005-2019),定名为豫金蜜3号(图1)。豫金蜜3号系谱图如图2所示。选用12对SSR引物对亲本秋蜜红和豫金蜜3号进行分析(图3),其中8对引物在秋蜜红和豫金蜜



图1 中熟鲜食黄肉桃新品种豫金蜜3号

Fig. 1 A new mid-maturing yellow-fleshed peach cultivar Yujinmi 3

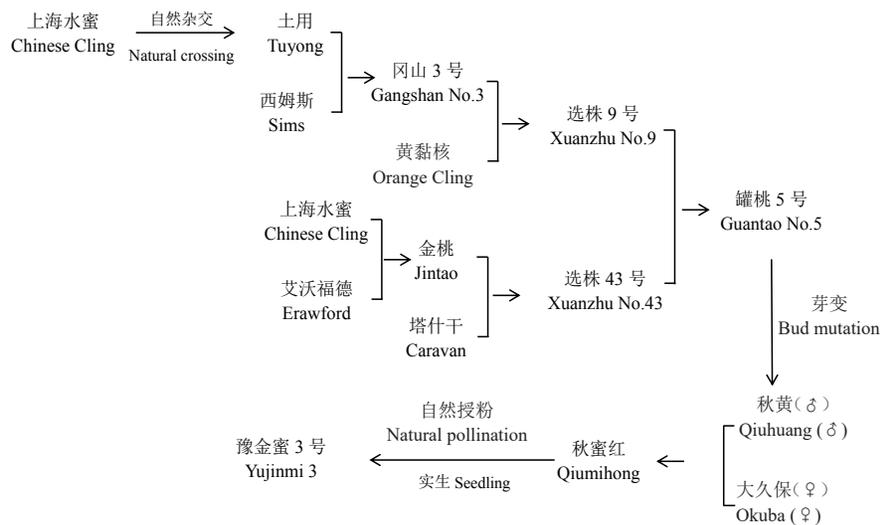
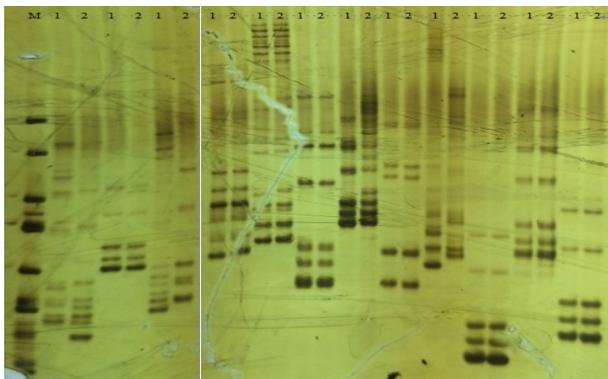


图 2 豫金蜜 3 号遗传背景

Fig. 2 Pedigree of yellow-fleshed peach cultivar Yujinmi 3



1. 秋蜜红; 2. 豫金蜜 3 号; M. TaKaRa 50 bp DNA ladder.
1. Qiumihong; 2. Yujinmi 3; M. TaKaRa 50 bp DNA ladder.

图 3 秋蜜红和豫金蜜 3 号分子鉴定图谱

Fig. 3 Molecular identification of Qiumihong and Yujinmi 3

3 号中目标条带相同, 有 4 对引物表现差异, 由于豫金蜜 3 号为秋蜜红的天然杂交实生后代, 可能是父本基因型或秋蜜红自交导致基因型改变。

2 主要性状

2.1 果实性状

豫金蜜 3 号果实呈圆形, 两半部较对称, 果顶圆凸, 缝合线浅, 成熟度一致; 梗洼深。果实大, 平均单

果质量 245 g, 最大果质量 322 g; 果实纵径 8.01 cm, 果实横径 7.32 cm, 果实侧径 7.56 cm。果面茸毛稀少, 果面金黄色; 果皮厚, 果肉黄色, 硬溶质偏韧, 核周围有红色素; 果肉细嫩, 风味浓甜, 香味浓郁; 可溶性固形物含量 (w , 后同) 13.9%~16.2%, 总糖含量 8.2%~10.8%, 维生素 C 含量 $7.2 \text{ mg} \cdot 100 \text{ g}^{-1}$ (表 1); 去皮果肉硬度 $1.21 \sim 1.92 \text{ kg} \cdot \text{cm}^{-2}$ 。黏核; 核卵圆形, 尖钝, 核面深紫红色, 沟纹宽、浅稀, 点凹大、深、少。核长 3.71 cm、宽 2.36 cm、厚 1.62 cm。

2.2 植物学特征

豫金蜜 3 号新梢绿色, 当年生果枝平均生长量 112 cm, 节间平均长 1.77 cm, 中长果枝结果为主。叶片大, 长椭圆披针形, 颜色绿, 叶缘钝锯齿, 缺刻深浅中等, 叶基部楔形, 先端渐尖。花蔷薇型, 5 瓣, 花粉多。

2.3 生长结果习性

豫金蜜 3 号植株长势旺盛, 树姿半开张, 萌芽率高, 成枝力强, 一年可抽生 2~3 次副梢。豫金蜜 3 号桃定植当年就可成花, 2 a 见果, 3 a 每 666.7 m^2 产量超过 1000 kg, 5 a 生树每 666.7 m^2 产量超过 2500 kg。幼树以长果枝结果为主, 盛果期各类果枝均可结果;

表 1 豫金蜜 3 号与对照品种果实主要农艺性状比较

Table 1 Comparison of main characters between Yujinmi 3 and the control cultivar

品种 Cultivar	成熟期 Ripening date	果形 Fruit shape	肉质 Flesh type	平均单果质量 Average single weight/g	w(可溶性固形物) Soluble solids content/%	w(可溶性糖) Soluble sugar content/%	w(可滴定酸) Titratable acid content/%	w(维生素 C) Vitamin C content/($\text{mg} \cdot 100 \text{ g}^{-1}$)	黏/离核 Freestone/ Clingstone
豫金蜜 3 号 Yujinmi 3	8 月上旬 Early August	圆形 Round	硬溶质 Hard melting	245	13.9~16.2	8.2~10.8	0.25~0.27	7.2	黏核 Cling stone
黄金蜜桃 3 号 Huangjin mitao 3	7 月底 Late July	圆形 Round	硬溶质 Hard melting	246	11.4~13.9	9.2~10.3	0.32~0.36	7.1	黏核 Cling stone

自花授粉结实率高。

2.4 物候期

豫金蜜3号在郑州地区,萌芽期一般在3月中下旬,初花期在3月底至4月初,盛花期在4月初,末花期在4月8日左右,果实8月5日左右开始采收。果实发育期120 d左右,9月底枝条停止生长,11月上旬开始落叶,11月中旬完全落叶,进入休眠。全年生育期240 d左右。

2.5 适应性和抗逆性

经过连续多年、多点区域化比较试验,结果表明,豫金蜜3号在河南省桃适宜栽培区均适应性良好,在肥力中等的土壤条件下,均能够表现出该品系的生长结果特性。在平原地区以毛桃作砧木,在干旱的丘陵、山地以山桃作砧木。豫金蜜3号为中熟品种,病虫害主要有蚜虫、桃小食心虫、桃蛀螟、白粉病、细菌穿孔病等,豫金蜜3号对这些病虫害抗性比一般早中熟品种都强。

3 栽培技术要点

3.1 栽植密度和适宜树形

3.1.1 主干形 株行距为1.5 m×3.5 m,每666.7 m²栽植127株,密植栽培可按照1 m×3 m栽培,每666.7 m²栽植222株。每株只留1个直立的永久性主干,横向枝均为临时性结果枝。结果枝长度30 cm左右,冬剪疏除当年结果枝,1年生健壮新枝留作结果枝。控制树体高度2.5 m左右,冠径1 m以内。盛果期每666.7 m²产量3000 kg左右。

3.1.2 Y字形 推荐株行距为2 m×4 m,每666.7 m²栽植83株。主干50 cm左右,留2个主枝,主枝与主干夹角30°~40°。主枝上着生结果枝,推荐采用长枝修剪。树体高度控制在2.5 m左右,每666.7 m²产量3000 kg左右。

3.1.3 三挺身或四挺身开心形 推荐株行距为3 m×5 m,每666.7 m²栽植45株左右。主干高50 cm左右,主干上留3~4个直立斜生的永久性主枝。主枝均匀分布,主枝前后左右应有1 m间距,每666.7 m²产量2000~3000 kg。

3.2 管理技术要点

豫金蜜3号桃树势强健,半开张形态,可通过夏季修剪控制树势,以避免枝条冗余生长;冬季宜轻剪,以保证第2年结果枝数量。花果期注重疏花疏果。疏花宜在初花期进行,疏除发育差、畸形花蕾,

留最好的花蕾;4月底至5月初疏果,疏除畸形果、朝天果、病虫果和小果等;推荐短中果枝和长果枝分别留1、2~3和4个果,控制盛果期每666.7 m²产量在3000 kg以内。

豫金蜜3号为中熟品种,推荐进行果实套袋栽培。套袋时间为5月下旬,首先全园喷施杀虫杀菌剂,2~3 d后进行果实套袋,时间最好在晴天的09:00—11:00和15:00—18:00。采收前5 d去袋或直至采收不去袋。春季果树生长期,注意防治桃蚜虫,果实成熟期注意防治桃小食心虫和桃蛀螟等。

豫金蜜3号丰产性强,丰产期应增加有机肥施用量。在河南地区,推荐5月下旬开始,每10 d喷施1次0.3%NaH₂PO₄,至采果前20 d停止;9—10月施入基肥。为延长果实货架期和维持果实品质,建议采收前15 d不浇水。

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