

低需冷量桃新品种南桂桃1号的选育

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摘要:南桂桃1号是以97-42-40为母本、Flordaglo为父本杂交育成的低需冷量桃新品种,需冷量约200 h。该品种果实扁圆形,果顶稍凹陷,平均单果质量233 g,最大单果质量454 g。果面茸毛中等,底色黄白色,3/4以上着红色。果肉白色,半离核,肉质为硬溶质,风味甜,可溶性固形物含量(w,后同)为12.4%,可滴定酸含量为0.24%。在江苏省南京市(经度118°87'、纬度32°03')7月上中旬果实成熟,广西壮族自治区桂林市(经度109°45'、纬度24°18')6月中旬成熟,靖西市(经度106°42'、纬度23°13')5月底至6月初成熟。该品种生长势偏旺,花为蔷薇型,有花粉,自花结实,早果丰产;流胶病抗性中等,春季温度偏低年份有少量缩叶病发生。适宜江苏、广西以及类似气候条件区域种植。

关键词:桃;新品种;南桂桃1号;低需冷量

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Breeding report of a new low-chilling-requiring peach cultivar Nanguitao No. 1

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Abstract: Low temperature is essential for the normal growth and development of deciduous fruit species like peach. To break dormancy and resume growth, adequate accumulation of low temperatures (chilling requirement, CR) is necessary. Chilling requirement is the major factor to determine the bloom date, and plays a key role in the climatic distribution of plants as well as fruit yield and quality. With the development of peach production in the southern China and forcing culture in the northern China, low chilling requirement varieties with high quality are needed urgently. Nanguitao No. 1 is a new low chilling peach cultivar with CRs about 200 h. It was derived from the cross between 97-42-40 as a female parent and Flordaglo as the pollen. The cross was made in spring of 2004, and 79 seedlings were transplanted in the experimental orchard of Jiangsu Academy of Agricultural Sciences with a spacing of four meters between rows and one meter in the rows in late April of 2005. It was initially selected in 2009 for its early blooming, nice fruit shape and good flavor, and then top grafting was applied in Lishui. After regional adaptability testing at three sites (including Nanjing, Guilin and Jingxi) over eight years from 2012 to 2019, it was finally selected in 2019. The tree is vigorous with a semi-open growth habit. Young branches are amaranth in color. The internode length is long with the average of 2.93 cm. The green leaves are long elliptic-lanceolate, 16.93 cm long and 4.50 cm wide. The petiole length is 0.97 cm, with 4-6 reniform glands. The flower is showy with five pink petals. It blooms in late-February to early-

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March in Nanjing (118°87' E, 32°03' N), mid-February in Guilin (109°45' E, 24°18' N), and late January in Jinxi (106°42' E, 23°13' N). The mature period is in early-mid July in Nanjing, mid-June in Guilin and by the end of May to early June in Jingxi. The fruit shape is oblate with concave top. The white skin is mostly covered by red blush. The flesh is white, hard melting, juicy, sweet with good quality. Haematochrome staining of pit cavities was found near the stone. The average fruit weight is 233 g and the maximum fruit weight is 454 g. The soluble solids content is 12.4% and the titratable acid content is 0.24%. The semi-free stone is small and nearly round. This cultivar is self-fruitful, and the open pollination fruit rate is very high, reaching about 60%. It has good precocity and high yield potential, and fruit thinning is needed about 25 d after full bloom for good quality. It is moderately resistant to peach gummosis, while leaf curl occurs in warm and damp spring. Long-shoot pruning should be taken to control vigorous growth of young trees. It can be planted in Jiangsu province, Guilin and Jingxi of Guangxi Zhuang Autonomous Region as well as other areas with similar climate and geographical conditions.

Key words: Peach; New cultivar; Nanguitao No. 1; Low chilling

需冷量是打破落叶果树自然休眠所需的有效低温时数,只有满足低温需求量,果树才能正常开花结果。我国自20世纪80年代末期开始进行桃品种需冷量评价^[1],之后开展了遗传特性、新品种选育等研究^[2]。近年南方低纬度地区桃树种植热情高涨,但所用品种多为常规中、高需冷量品种,由于冷量不充足,出现了开花不整齐、产量低等现象,制约了南方桃产业的发展;北方设施栽培品种也以露地早熟桃和油桃为主,为了抢早上市,大多采用提前扣棚、使用植物生长调节剂等措施,导致出现果顶尖凸、裂核、风味品质差等现象,严重影响了设施桃的市场价值。因此,培育需冷量低、果实品质优的桃品种,对扩大桃栽培南限和北方设施促早栽培具有重要意义。江苏省农业科学院以南山甜桃^[3]、Flordaglo^[4]等低需冷量种质为亲本,与优质栽培品种杂交,开启了低需冷量桃新品种选育研究。

1 选育经过

2004年春以中熟水蜜桃优系97-42-40为母本、美国低需冷量桃品种Flordaglo为父本(图1),进行杂交授粉。7月上旬采收杂交果实95个,培育获得杂种实生苗79株;2005年春定植于江苏省农业科学院桃育种圃,株行距1 m×4 m,按照常规栽培措施进行日常管理,2007年杂种单株开花结果。经过连续3 a(年)的观察,单株XNN6-6开花早,有花粉,果形端正,外观漂亮,风味甜(父本Flordaglo风味酸),2009年选为优良单株,同年秋季在溧水基地进行高接。2011年春向广西特色作物研究院提供接穗,

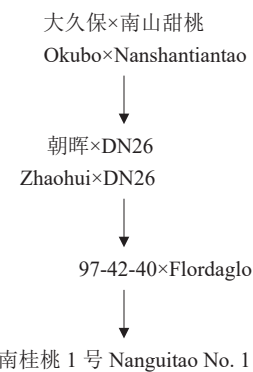


图1 南桂桃1号的系谱关系

Fig. 1 The pedigree of low chilling peach cultivar Nanguitao No. 1

2014年在桂林结果,2018年在百色的靖西结果。经连续多年多点的观察比较,该品种综合性状优良、表现稳定。花期较对照品种霞晖5号提早10 d左右,成熟期较霞晖5号推迟1周左右。采用0~7.2 °C模型^[5]测试,需冷量在200 h左右。2022年8月获得农业农村部植物新品种权证书,定名为南桂桃1号(图2)。

2 主要性状

2.1 植物学特征

树势偏旺,树姿半开张。1年生新梢向阳面紫红色,节间长度偏长,平均为2.93 cm。叶片长16.93 cm,宽4.50 cm,叶柄长0.97 cm,长椭圆披针形,绿色;叶柄蜜腺肾形,4~6个,多为4个;叶片先端渐尖,叶基部楔形,叶缘圆锯齿状。花为蔷薇型,花冠粉色。柱头与花药位置等高,萼筒内壁绿黄色,有花粉。



图2 低需冷量桃新品种南桂桃1号

Fig. 2 A new low chilling peach cultivar Nanguitao No. 1

2.2 果实主要经济性状

果实扁圆形,果顶稍凹陷,缝合线浅,两半部对称,成熟度较一致。平均单果质量233 g,大果质量454 g。果皮底色白色,果面大部分着红色;果皮中

厚、茸毛中等,梗洼中深。果肉白色,近核处有少量红色素,硬溶质,汁液中等,纤维少,风味甜,鲜食品质优。可溶性固形物含量(w ,后同)为12.4%,可滴定酸含量为0.24%。半离核,核小(表1)。

表1 南桂桃1号与其亲本和霞晖5号的比较

Table 1 Comparisons of Nanguitao No. 1 and parent and Xiahui No. 5

品种 Cultivar	盛花期 Full bloom date	果形 Fruit shape	平均单果质量 Average fruit mass/g	w (可溶性固形物) Soluble solids content/%	w (可滴定酸) Titratable acid content/%	肉质 Flesh texture	风味 Flavor	花粉育性 Pollen fertility
南桂桃1号 Nanguitao No. 1	2月下旬至3月上旬 Late Feb. to Early Mar.	扁圆 Oblate	233.0	12.4	0.24	硬溶质 Hard melting	甜 Sweet	可育 Fertile
霞晖5号 Xiahui No. 5	3月中旬 Mid Mar.	圆 Round	178.0	12.7	0.15	软溶质 Soft melting	甜 Sweet	可育 Fertile
Flordaglo	2月下旬至3月上旬 Late Feb. to Early Mar.	扁圆 Oblate	156.0	10.5	0.44	硬溶质 Hard melting	酸 Sour	可育 Fertile
97-42-40	3月上旬 Early Mar.	圆 Round	199.9	11.1	-	硬溶质 Hard melting	甜 Sweet	不稔 Sterile

注:“-”表示未测定可滴定酸含量。

Note:“-” indicates that titratable acid content was not detected.

2.3 生长结果习性

南桂桃1号生长势较强,易成花,花芽起始节位第2~4节,以复花芽为主。6年生树徒长性果枝、长果枝、中果枝、短果枝、花束状果枝比例为3.29%、34.73%、20.96%、24.85%、16.17%,各类果枝均结果良好,自花可以结实,花期天气晴好的情况下,自然授粉坐果率达60%。早果丰产,1年生成苗种植第2年即可开花结果,第4年进入盛果期,每666.7 m²产量控制在1500 kg左右。

2.4 物候期

该品种物候期偏早,在南京地区2月上旬萌芽,2月下旬至3月上旬盛花,花期持续7 d左右,主要与当时的气温相关;7月上中旬果实成熟;11月中旬开始落叶,12月上旬落叶终止,全年生育期约290 d。在广西壮族自治区桂林市2月中旬盛花,6月中旬成

熟;在百色的靖西,1月中旬盛花,5月底6月初果实成熟。

2.5 抗性及栽培适应性

南桂桃1号在江苏、广西均生长良好,至今未发现特别病虫害危害。2021年早春温度偏高,萌芽开花提前,2月底温度下降并伴随降雨,南桂桃1号出现少量缩叶病,之后随着温度的回升,新叶恢复正常。通过对6年生树体流胶发生情况的田间观察,所调查植株均有流胶,发病等级为2~3级,属于中等抗性^[6]。在广西产区,附近种植柑橘的桃园存在橘小实蝇危害现象。

3 栽培技术要点

3.1 定植建园

低需冷量品种生长期长、树体生长量大,不宜采

用密植栽培模式。建议平地行距5 m,株距自然开心形3~4 m、两主枝Y形2.5~3.0 m;丘陵山地根据地形地貌而定。

3.2 整形修剪

幼树生长较旺,宜加强夏季修剪,促进主枝分级,搭建稳固的骨架;冬季采用长枝修剪,缓和树势。果实采收后需及时疏除延长枝顶端及内膛旺盛生长枝,改善光照条件,防止树冠下部枝条枯萎,结果部位外移。

3.3 肥水管理

每年10—11月份施基肥,用量一般为每666.7 m²施腐熟有机肥1500 kg左右。果实膨大期每株施1 kg硫酸钾或腐熟饼肥,采收前15 d不浇水,以提高果实内在品质。

3.4 花果管理

南桂桃1号虽然开花早,但在南京地区10多年来未曾出现因花期受冻而造成的减产现象,自然坐果率高,花后25 d开始可分批疏果。果实生长发育期长,建议套袋栽培,江苏产区推荐白色或浅黄色纸袋,广西等柑橘产区采用纸质稍厚的果袋;果实硬度中等,注意适时采收,以提高商品果率以及耐运输性能。

3.5 病虫害防治

做好清园工作,及时清除病虫果枝,保持桃园清洁卫生;抓住萌芽前后的关键防治期,尤其注重石硫合剂的使用,春季如遇低温天气,需关注缩叶病发

生;南方柑橘产区特别注意橘小实蝇的防控。

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