

## 刺葡萄新品种湘刺3号的选育

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**摘要:** 湘刺3号是从怀化市中方县桐木镇通过实生选种得到的一个极晚熟刺葡萄新品种。果穗多呈圆柱形, 少部分有副穗, 松紧适中, 成熟时果皮呈蓝黑色, 果粉薄, 果皮厚, 平均穗质量163 g, 平均单粒质量3.4 g, 果形指数1.1(纵径/横径), 每颗果实中含种子2~3粒, 多为3粒, 种子颜色黑褐色。可溶性固形物含量(w, 后同)15.2%, 可滴定酸含量0.28%。果实发育期130 d左右, 3月下旬至4月初萌芽, 4月底至5月上旬开花, 9月下旬果实成熟。该品种抗旱性强, 极抗多湿土壤; 抗黑痘病、白粉病、炭疽病、灰霉病能力强, 但不抗霜霉病; 抗虫性强, 但不抗根瘤蚜。适宜在湖南、贵州、四川、江西、福建、湖北、云南、广东、广西、重庆等省份的葡萄产区春、秋两季种植。

**关键词:** 刺葡萄; 新品种; 湘刺3号; 抗性

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### Breeding report of a new spine grape cultivar Xiangci No. 3

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**Abstract:** The Xiangci No. 3 (*Vitis davidii*) is a new extremely late-ripening spine grape cultivar selected from Tongmu Town, Zhongfang County, Huaihua City. Different from the wild *V. davidii* resources which are dioecious, this cultivar has perfect flowers, with high yield, and its fruits can be used as table grape or for wine making. Xiangci No. 3 was initially selected from occasional seedlings in 2012 for its hermaphrodite flower and very late ripening date. The original tree was about 20 years old, and then propagated by grafting or cutting. The field trials were carried out afterwards. It was registered as Xiangci No. 3 by The ministry of Agriculture and Rural Affairs of the P.R.C. in June, 2020. The branches and petioles are covered with prickles, and they are erect or slightly curved at the apex with a length of 2–4 m. The young leaves are bright reddish brown and shiny. Only the veins on the back of the leaves have sparse pubescence, and there are no villi between the veins. The first inflorescence is located at 3–5 nodes. Each shoot has 1–2 inflorescences. The mature leaves are cuneate-shaped, trifid, the leaf color is green, and the leaf edge is lightly rolled downward, moderately thick. The leaf edge is serrate and projecting laterally. The petiole depressions are mostly open, and V-shaped. The clusters are mostly cylindrical, with a small number of cylindrical-winged, moderate tightness. The peel of fruit is thick and covered with thin powder, and it is easy to separate from the flesh. The flesh is pliable and difficult to separate from the seed. The average cluster weight is 163 g. The average single berry weight is 3.4 g, and the fruit shape index is 1.1 (longitudinal/transverse diameter).

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There are 2.8 seeds in each fruit on average, and the seeds are dark brown in color, with no transverse groove and obvious seed umbilicus. In winter, the branches are yellowish brown and oval in cross section. The annual branches bear slender prickles of medium density. The juice yield is 68%, the content of soluble solid is 15.2%, and the content of titratable acid is 0.28%. The fruit development period is about 130 days, the bud burst date is from late March to early April, and flowering date is from late April to early May, the berries ripening date is late September. The cultivar has high and stable yield, the average yield of the third year after planting is 11 250–15 000 kg · hectare<sup>-1</sup>. The genetic specificity of the cultivar was demonstrated by the detection of nine pairs of simple repeat sequence markers. The cultivar has strong resistance to drought and extreme resistance to high temperature and humid climate. It has strong resistance to anthracnose, powdery mildew, ripe rot and gray mold, but not downy mildew, it is a valuable resource for breeding grape with dampness-heat resistance and disease resistance. This cultivar has strong insect resistance, but does not have resistance to grape phylloxera. It is suitable for planting in spring and autumn in grape producing areas of Hunan, Guizhou, Sichuan, Jiangxi, Fujian, Hubei, Yunnan, Guangdong, Guangxi and Chongqing etc. The cultivar should be cultivated by flat trellis with a planting density of 4 m×5 m, with a single trunk “H” type tree form. It also could be cultivated by “double cross V-frame” method combined with rain shelter with a spacing of 2 m×3 m.

**Key words:** Spine grape; New cultivar; Xiangci No. 3; Resistance

刺葡萄(*Vitis davidii* Foëx.)属于葡萄科葡萄属东亚种群的一个种,为未完全经过人工驯化的野生植物资源,原产于湖南、云南、广东、江西、浙江等省<sup>[1]</sup>。在中国野生葡萄中刺葡萄的果粒最大,鲜食及加工兼用,具有一定的商业价值,其对黑痘病、白腐病、炭疽病等具有很强的抗性,成为葡萄耐湿热、抗病育种的宝贵资源<sup>[2]</sup>。湖南省选育的刺葡萄品种有紫秋<sup>[3]</sup>、湘酿1号<sup>[4]</sup>、湘刺1号<sup>[5]</sup>三个品种,成熟期均在9月上旬,但仍有许多野生或变异资源未得到充分的保存和利用。

湘刺3号是湖南农业大学葡萄团队选育的刺葡萄新品种。果实成熟期晚(9月下旬)、糖酸比高,色素含量偏低,风味独特,营养及保健成分丰富,经试验研究其可鲜食亦适合制汁,并可用于酿制桃红或甜红葡萄酒。

## 1 选育过程

笔者课题组自2010年开始对怀化市中方县桐木镇的实生刺葡萄类型进行调查和筛选,发现一个优良单株——湘刺3号(也称米刺葡萄)。该树树龄20 a(年)左右,定植行株距为6 m×6 m左右,采用棚架式栽培,棚架高2 m左右。自2012年开始对这株表现优异的刺葡萄进行植物学观测。并通过嫁接和

扦插扩繁,从而得到优良株系,并在湖南农业大学及中方县进行区试和推广种植。2014—2015年与湘酿1号和另外几个刺葡萄类型进行了配组试验,该品种表现出成熟期晚于湘酿1号和紫秋等品种。该株系果穗整齐,品质佳,果粒小,种子少,产量高,适应性及抗逆性强,更适合制汁和酿酒。2020年6月19日通过农业农村部非主要农作物品种登记,定名湘刺3号[编号:GPD葡萄(2020)430010](图1)。



图1 新品种湘刺3号田间栽培表现

Fig. 1 The new cultivar Xiangci No. 3 and its field performance

## 2 主要性状

### 2.1 植物学特征

湘刺3号属东亚种群刺葡萄种,两性花。该品种当年生枝及其叶柄部位着生皮刺(图2),幼叶鲜红棕色,成熟叶片为楔形;叶中等厚,锯齿多为两侧凸,数目少;叶柄洼多为开张,V形。第一花序着生节位3~5节位,花序具副穗,5月上旬开花。冬季枝条黄褐色,横截面为椭圆形;皮刺中等密,较细(图3)。



图2 湘刺3号枝梢皮刺着生

Fig. 2 The state of prickles on the growing shoots of Xiangci No. 3

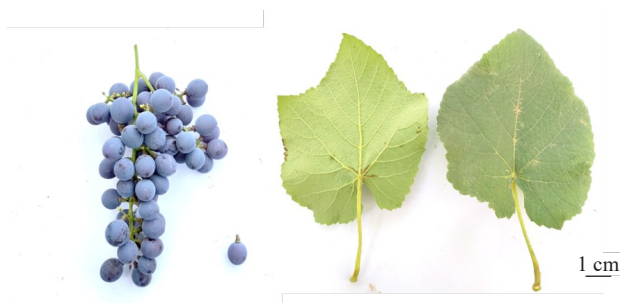


图3 湘刺3号成熟果穗和叶片

Fig. 3 Mature cluster (left) and leaves (right) of Xiangci No. 3

### 2.2 果实经济性状

湘刺3号果穗多为圆柱形(表1),松紧适中;平均单穗质量163 g,果粒圆形,单粒质量3.4 g;果粉薄,果皮较厚;初始着色为红紫色,成熟后为蓝黑色。含种子2~3粒,多为3粒,种子黑褐色,无外表横沟,种脐明显;平均百粒质量3.16 g,长5.02 mm,宽3.97 mm,与紫秋相比种子短小,长宽比小。

### 2.3 生物学特性

2.3.1 物候期 在湖南,湘刺3号一般于3月下旬至4月初萌芽,4月下旬至5月上旬开花,9月中下旬果

表1 湘刺3号和湘刺1号主要果实性状比较

Table 1 The comparison of main fruit attributes between Xiangci No. 3 and Xiangci No. 1

性状 Trait	湘刺3号 Xiangci No. 3	湘刺1号 Xiangci No. 1
果穗形状 Cluster shape	圆柱形 Cylindrical	圆柱形 Cylindrical
穗质量 Cluster mass/g	163	220
果粒形状 Berry shape	圆形 Circular	圆形 Circular
平均单粒质量 Average berry mass/g	3.4	4.4
果皮颜色 Skin color	蓝黑色 Blue black	蓝黑色 Blue black
w(可溶性固形物) Soluble solids content/%	15.2	17.5
种子数 Seed number per berry	2~3	3~4

实成熟。从萌芽到成熟约170 d,从坐果到成熟约130 d,属极晚熟品种。

2.3.2 结果性能 湘刺3号的丰产稳产性强。一般栽后第2年开始结果,每666.7 m<sup>2</sup>产量500~750 kg,第3年每666.7 m<sup>2</sup>平均产量750~1000 kg。果枝着生于结果母枝第2~10节,每果枝平均结2穗果实,单穗质量最大可达250 g。

2.3.3 抗逆性与适应性 湘刺3号抗逆性较好,抗旱性强,极抗多湿土壤。田间种植病害较少,对葡萄黑痘病、葡萄白粉病、葡萄炭疽病、葡萄灰霉病等病害的抗性极强,对葡萄霜霉病抗性较差。抗虫性强,适宜栽培于湖南省各地。

## 3 遗传特异性

利用9对SSR标记检测了刺葡萄新品种湘刺3号的遗传特异性。9对标记分别为VChr3a<sup>[6]</sup>、VVMD5<sup>[7]</sup>、VrZAG79<sup>[8]</sup>、VrZAG62<sup>[8]</sup>、VVMD28<sup>[9]</sup>、VVMD27<sup>[8]</sup>、VChr14b<sup>[6]</sup>、VVMD7<sup>[7]</sup>、VVMD25<sup>[9]</sup>。结合其他品种在这9个位点的基因型数据,计算出个体间的遗传距离,使用遗传距离数据构建聚类图,结果表明该品种在遗传上是特异的,不同于其他供试刺葡萄和鲜食葡萄品种。刺葡萄新品种湘刺3号与其他刺葡萄品种或株系(包括湘刺1号、E8\_7、E15\_4等)聚为一类;鲜食葡萄品种(如金手指、玫瑰香、红宝石无核、红地球等)聚为一类,酿酒葡萄黑比诺单独聚为一类。在刺葡萄品种或株系一类中,湘刺3号与湘刺1号有分离,该品种与特异单株E8\_7及E15\_4和E14\_9的关系要近于湘刺1号(图4)。

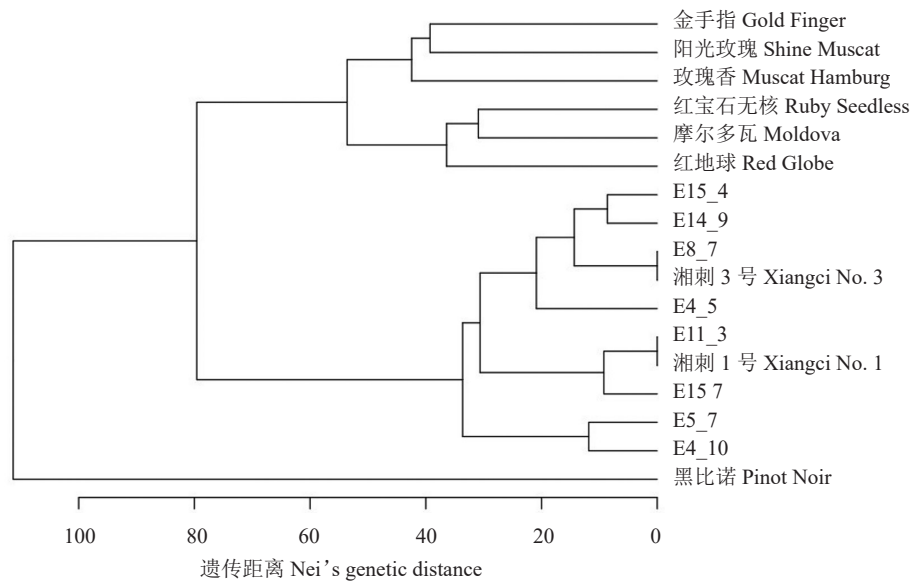


图 4 湘刺 3 号与其他刺葡萄和鲜食葡萄品种的关系聚类分析

Fig. 4 The genetic relationship between other spine and table grape cultivars and Xiangci No. 3

## 4 栽培技术要点

### 4.1 架式与整形

湘刺 3 号宜采用平棚架式栽培,栽植密度为 4 m×5 m,采用单干“H”形或多主蔓棚架整形。也可采用“双十字 V 形架”结合避雨棚栽培方式,以防霜霉病危害,株行距宜 2 m×3 m。

### 4.2 肥水管理

为满足葡萄各个生育期对养分的需求,采用有机肥和无机肥配合施用,在保障底肥使用充足有机肥的前提下,减少化肥的用量。有机肥充足可改善土壤团粒结构,减少果实的生理病害,提高果实品质。施肥量依目标产量和土壤而定。刺葡萄丰产性好,种植户常会追求高产,施肥时需要注重对土壤的改良和对根系的养护。在根系生长高峰期之前适当使用氨基酸、腐殖酸等肥料,促进根系的生长。

### 4.3 花果管理

该品种丰产性好,在栽培中应注重对产量进行控制。可以通过疏除过多花穗而定产。在露地栽培条件下,湘刺 3 号果穗松紧适中,但其果粒相对于鲜食葡萄较小,因此一般不必对单穗疏果。萌芽后应抹芽疏枝,花期以前需疏除过密枝梢,保证通风透光,减少灰霉病的发生概率。在果实发育期适当留副梢,以便在果实采收后仍可制造部分养分用于来生长。

## 4.4 病虫害防治

病虫害以农业防治为主,宜采用生物防治,注重冬季清园,消灭越冬病虫害源。选用国家允许的杀虫剂与杀菌剂防治,农业与化学综合防治,防治效果好,确保生产出来的葡萄鲜果符合无公害果品的要求。在花期适当防治灰霉病,在全生长季重点防治霜霉病,在着色后期即小大暑期间注意防治炭疽病。

## 5 不同地区栽培条件下的果实品质

### 5.1 果实品质总体表现

湘刺 3 号在各试点均表现果实商品性好,果穗松紧适中,果实含糖量高,酸度低,品质好,平均可溶性固形物含量为 15.2%,最大值可达 16%,加工性能好(表 2)。

表 2 不同地区栽培条件下湘刺 3 号果实品质总体表现

Table 2 The overall performance of fruit quality of Xiangci No. 3 under cultivation conditions in different regions

地区 Region	平均穗 质量 Average cluster mass/g	平均粒 质量 Average berry mass/g	w(总酸) Total acid content/ %	w(可溶性 固形物) Soluble solids content/%
怀化芷江 Zhijiang, Huaihua	165	4.0	0.36	16.0
怀化中方 Zhongfang, Huaihua	163	3.0	0.29	15.2
澧县 Lixian	170	4.1	0.34	15.4
长沙 Changsha	159	3.2	0.19	13.9
吉首 Jishou	157	2.9	0.22	15.4

## 5.2 栽培建议

笔者课题组自2010年开始对怀化市中方县桐木镇的刺葡萄类型进行调查和筛选,选出优良单株。历经5 a的研究,已明确湘刺3号的生长结果习性及高效无公害栽培配套技术。研究结果表明,湘刺3号对土壤要求不严,适应性强,完全可以在湖南省及其他南方各省栽培。在生产实践中,选择地势高、排水良好的地块建园,采用深沟高垄棚架栽培;生长季节注意疏花疏果与疏枝,秋季严格控制副梢生长;重施有机肥,防止因土壤贫瘠缺铁造成黄化。

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