

刺葡萄新品种湘刺1号的选育

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摘要:湘刺1号是从怀化市中方县桐木镇选育得到的野生刺葡萄新品种。两性花,果实可用于鲜食及酿酒。果穗呈圆柱形,松紧适中,果粉中等厚,平均穗质量220 g,平均单粒质量4.4 g,成熟时果皮呈蓝黑色,可溶性固形物含量(w)可达17.5%。使用9对简单重复序列标记检测,结果表明该品种具有遗传特异性。该品种抗旱性强,耐高温高湿环境;对黑痘病、白粉病等具有较高的抗性,但不抗霜霉病;抗虫性强,但不抗根瘤蚜。适宜栽培于湖南、贵州、四川等地,春秋两季可种植。坡地环境会影响湘刺1号的果实品质,建议尽量选择在地势相对平坦的环境种植。

关键词:刺葡萄;新品种;湘刺1号

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A new spine grape cultivar Xiangci No. 1 (*Vitis davidii* Foëx.)

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Abstract: A new spine grape cultivar Xiangci No. 1 has hermaphrodite flowers, and the first inflorescence appears on the third to fifth node of the current cane. In 2012, a single spine grape line with decent berry quality was chosen for good botanical and agricultural traits. This excellent plant was later widely propagated by grafting and cuttings. The initial trial suggested that this plant not only had high yields, but also showed resistance to abiotic and biotic stress and had high adaptability to hot and humid climate in Hunan province. This new cultivar could be used for table grape and wine making. The growing canes and their leaf petioles from this new spine grape cultivar are covered with spine-shaped trichomes, young leaves are brightly red and brown, the veins on the underside of leaves are covered with low density trichomes and the leaf margin has no lobes or no obvious lobes, and the petiole depression is half open. Berry clusters are cylindrical with moderate tightness, berry surface is covered with medium thick wax, and berry skin is thick. Each fruiting cane carries an average two inflorescences, each one has a average length of 18.8 cm, and average inflorescence weight is 220 g. Berries are round with the fruit shape index of 1.0 and average berry weight is 4.4 g. At veraison stage, berry skin is light purple, and berries turn to blue black at maturity. The total soluble solids content is up to 17.5% when berry matures. The genetic uniqueness of this new cultivar was confirmed by using nine simple sequence repeat markers. The berry yield is about 1750–2000 kg per 666.7 m². Because the new cultivar tends to have high yield, if berry yield is not properly controlled, vine vigor may decline prematurely. Yield management could be achieved by thinning blossoms and berries. Attention should be paid to soil improvement and root conservation. For fertilizer and water management, reducing chemical fertilizer application and increasing organic manure application can reduce the incidence of berry physiological diseases

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and improve berry quality. Reasonable fertilizer and water management can improve soil structure. Xiangci No. 1 has a high resistance to grape spot anthracnose, powdery mildew and other diseases, but the new cultivar is susceptible to downy mildew. The cultivar showed resistance to general insects but is susceptible to phylloxera. To reduce losses caused by plant diseases, rain shelter cultivation is recommended as it could effectively protect vines from downy mildew and other plant diseases. The cultivar showed relatively high levels of drought resistance and tolerance to hot and humid environment, which makes it suitable for cultivation in southern provinces of China such as Hunan, Guizhou, Sichuan, Jiangxi, Fujian, Guangdong, Yunnan and other places. New vineyards can be established in spring or autumn. After systematic observation and analysis, the overall performance of this new spine grape cultivar is excellent and stable. Therefore, the cultivar was registered as non-major crop cultivars by the Ministry of Agriculture and Rural Affairs on June 19, 2020. The new cultivar belongs to spine grape population and it was named as Xiangci No. 1. The official registration number of this cultivar was GPD grape (2020) 430 008. Xiangci No. 1 has been cultivated in Hunan province as a major spine grape cultivar and is widely planted in sloping vineyards because its total soluble solids content in the berry is higher than that of other spine grape cultivars, but whether or not the sloping land growing conditions can affect its berry quality has not been studied. The effect of terrain on berry quality of the new cultivar was investigated by analyzing more than 140 plants growing at different rows. These results indicated that terrain significantly affected berry quality of Xiangci No. 1 and may provide an important reference for growing this cultivar on sloping vineyards and in other environments.

Key words: Spine grape; New cultivar; Xiangci No. 1

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,主要分布在湘西地区^[1]。刺葡萄对环境的适应性强,能较好地适应高温高湿环境,抗病能力强^[2],且其果粒大小是东亚种群中最大的,因此是不可多得的优良种质资源。湖南省选育的刺葡萄品种有紫秋^[3]、湘酿1号^[4]两个品种,仍存在许多野生或变异资源未得到充分地保存和利用。

湘刺1号是湖南农业大学葡萄团队选育的刺葡萄新品种。该品种为湖南刺葡萄产区怀化市中方县的主栽品种,因可溶性固形物含量高于一般刺葡萄品种,故俗称“甜刺葡萄”,为怀化国家地理标志产品“湘珍珠”。该品种果皮紫黑色,上布有白色果粉,汁多色艳易栽培,产量高,可滴定酸含量在刺葡萄不同品种中相对较低,是地方优质栽培品种^[5]。

1 选育过程

湖南农业大学葡萄团队2010年开始对怀化市中方县桐木镇的刺葡萄种质资源进行调查和筛选,发现一个优良单株湘刺1号(也称甜刺葡萄)。2012年开始对该刺葡萄单株连续多年进行植物学观测,并通过嫁接和扦插扩繁,得到营养繁殖株系,并在湖

南农业大学及中方县进行相关试验和推广种植。2014—2015年与湘酿1号和另外3个刺葡萄优良单株进行了配组试验,结果表明该品种与湘酿1号成熟期相近,但丰产性更好,适应性及抗逆性更强。果实表现出可溶性固形物含量高、可滴定酸含量较低、品质较好、穗形松紧适中等优势且性状稳定。2020年6月19日通过农业农村部非主要农作物品种登记,刺葡萄种群,可用作鲜食和酿酒,定名湘刺1号[编号:GPD葡萄(2020)430008](图1)。

2 主要性状

2.1 植物学特征

湘刺1号属东亚种群,两性花。该品种当年生枝及其叶柄部位着生皮刺(图2),长2~4 mm,幼叶鲜红棕色,有光泽,叶背仅叶脉处有稀疏短茸毛,叶脉间无茸毛。成熟叶片心形,全缘无裂刻或不明显三裂,叶色浓绿,中等厚,叶柄洼半开张。

2.2 果实经济性状

湘刺1号果穗多为圆柱形,松紧适中,每果枝平均结2穗果,平均单穗质量为220 g,果穗大小152.0 cm²,果穗平均长度18.8 cm;果粒圆形,果形指数1.0,果粒大小3.8 cm²,单粒质量为4.4 g,可溶性



图1 新品种湘刺1号田间栽培表现

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



图2 湘刺1号枝梢皮刺

Fig. 2 The spine-shaped trichomes on growing shoots of Xiangci No. 1

固形物含量17.5%;果粉中等厚,果皮厚;初始着色浅紫色,成熟后蓝黑色。单粒种子数量与紫秋相近,每颗果实种子数量为3~4粒,种子平均百粒质量为3.81 g,种子平均长度6.24 mm,宽度4.46 mm(表1)。

2.3 生物学特性

2.3.1 物候期 湖南长沙地区种植的植株3月下旬至4月初萌芽,4月底至5月初开花,7月中下旬开始着色,9月上旬开始成熟,留树挂果时间长。

2.3.2 生长结果习性 湘刺1号为两性花,第一花序着生节位3~5节位,以第4节位居多,每新梢花序数1~3个,以2个花序居多,每666.7 m²产量为1750~2000 kg。

2.3.3 抗逆性与适应性 湘刺1号抗旱性强,耐高

表1 湘刺1号和紫秋主要果实性状比较

Table 1 The comparison of main fruit characters between Xiangci No. 1 and Ziqiu

品种 Cultivar	果穗形状 Cluster shape	穗质量 Cluster mass/g	果粒形状 Berry shape	平均单粒质量 Average berry mass/g	果皮颜色 Skin color	w(可溶性固形物) Soluble solids content/%	种子数(每粒) Seed number per berry
湘刺1号 Xiangci No. 1	圆柱形 Cylindrical	220	圆形 Circular	4.4	蓝黑色 Blue black	17.5	3~4
紫秋 ^[6] Ziqiu	圆锥形 Conical	227	椭圆形 Oval	4.7	紫黑色 Purple black	14.4	3~4

温高湿环境。较抗黑痘病、白粉病、炭疽病、灰霉病,但不抗霜霉病。抗虫性强,但不抗根瘤蚜。适宜栽培于湖南、贵州、四川、江西、福建、湖北、云南、广东、广西等地,春秋两季种植。

3 湘刺1号的遗传特异性

通过使用9对SSR标记检测刺葡萄新品种湘刺1号的遗传特异性,9对标记分别为VChr3a^[7]、VVMD5^[8]、VrZAG79^[9]、VrZAG62^[9]、VVMD28^[10]、

VChr14b^[7]、VVMD7^[8]、VVMD25^[10],并使用试验所用材料在这9个位点的基因型数据,计算出个体间的遗传距离^[11],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,不同于其他试验所用的刺葡萄和鲜食葡萄品种。刺葡萄新品种湘刺1号与刺葡萄聚类在一起,鲜食葡萄品种聚成一类,酿酒葡萄黑比诺单独聚成一类。在刺葡萄一类中,湘刺1号与紫秋不聚在一小类,该品种与特异单株E15-7的关系要近于紫秋(图3)。

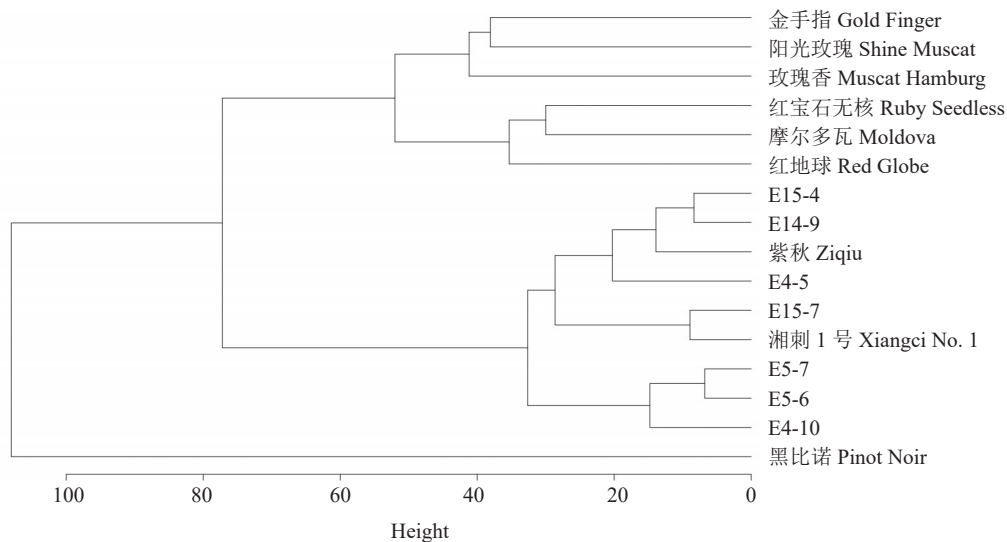


图 3 湘刺 1 号与其他刺葡萄、鲜食葡萄品种的聚类分析

Fig. 3 The genetic relationship among Xiangci No. 1, other spine and table grape cultivars

4 栽培技术要点

4.1 架势与整形

采用平棚架式栽培或“双十字 V 型架”结合避雨棚。湖南地区普遍采用平棚架栽培,该栽培架式成本低,适宜山地种植,为减少霜霉病感染,可结合避雨棚栽培方式。

4.2 花果管理

该品种丰产性好,若不控制产量,可能会导致树势早衰。通过疏花疏果定产量,去除过多花穗(或果穗),可不对单穗进行疏果,萌芽后应抹芽疏枝,花期以前疏除过密枝梢,保证通风透光,减少灰霉病的发生概率。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年生长。该品种果穗套袋,可提高果实品质,减少果实农药污染与日灼,适当延迟果实的成熟期,提高果实的耐贮藏性能。避雨栽培可不用套袋,以节约成本。

4.3 肥水管理

建议对该品种科学合理施肥,有机肥和无机肥配合施用。减少化肥施用量,增施有机肥,可减少果实生理性病害,提高果实品质,且可改善土壤团粒结构。该品种丰产性好,如果种植户追求较高产量,在施肥时应重视改良土壤和养护根系。施肥量依目标产量和土壤养分情况而定。采用地面滴灌能促进葡萄的生长结果、节约用水、减少地面径流、防止水土流失,且能降低空气湿度,减少病害发生。

4.4 病虫害防治

以农业防治为主,采用生物防治,注重冬季清园,消灭越冬病虫源。花期注意防治灰霉病,果实着色后期应注重防治炭疽病。注重采后处理,减轻鲜果在运输过程中的二次污染。

4.5 坡地栽培湘刺 1 号建议

坡地栽培环境显著影响湘刺 1 号的果实品质。植物的生长需要从土壤中获取养分,不同的地势环境对植株的生长发育有着不同的影响,从而导致不同地势环境条件下果实品质的差异,坡地栽培的湘刺 1 号果实还原糖含量高于平地^[12]。其与土壤水分含量有直接的关系^[13],会影响刺葡萄果实品质^[14]。湘刺 1 号的种植尽量选择地势相对平坦的河滩或者具有梯田的山地,既符合我国推行的“上山下滩”政策,又有利于刺葡萄更加均衡地生长。

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