

玫瑰香型中熟鲜食葡萄新品种天工丽人的选育

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摘要:天工丽人是巨玫瑰实生选育出的中熟鲜食葡萄新品种,属四倍体欧美杂交种。果穗圆锥形,紧密度中等,成熟度一致。果粒呈椭圆形,果皮紫红色,果粉适中。平均穗质量513.0 g,平均单粒质量8.23 g。果皮中等厚,易分离。果肉质较软,多汁,香甜爽口,玫瑰香味浓郁,每果粒含种子1~3粒。可溶性固形物含量(w,后同)20.5%,可滴定酸含量0.32%,维生素C含量76.9 mg·kg⁻¹。生长势较强,花芽分化优良,二次结果能力强,丰产性强。在浙江海宁地区设施栽培条件下,3月中旬萌芽,8月上旬一次果成熟,10月二次果成熟,南北方均适合种植。

关键词:鲜食葡萄;新品种;天工丽人;中熟;玫瑰香味

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A new muscat flavor table grape cultivar Tiangong Liren

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Abstract: Tiangong Liren is a new mid-ripening table grape cultivar derived from the Jumeigui grape seedling. The seedlings were raised in 2012, and the plants were transplanted to the grape breeding resource nursery of Zhejiang Academy of Agricultural Sciences in 2013. It was initially selected in 2015 for its high yield, good coloring, rich flavor, strong muscat aroma, good quality and strong adaptability. After regional adaptability testing in multi-plot sites for 3 years (2019—2021), it was finally named Tiangong Liren. It is a tetraploid cultivar with bisexual flowers. The shoot tip is half-open with extremely dense villi and weak anthocyanins. The new shoots are semi-erect and the dorsal side of the internodes of the new shoots is green. While the ventral side of the internodes is green with red stripes and the density of erect villi is sparse. The upper surface of young leaves is yellowish green, and the grape creeping villi between the main veins on the back are dense. The tendrils are of medium length and distributed discontinuously. The mature leaves are green and heart shape with 3 or 5 lobes. The shape of the serrations is convex on both sides, and the ratio of the length to width of the serrations is 1.08. The petiole sinus is closed. The upper lateral sinus of the leaf overlaps slightly, while the lateral sinus is open. The leaf veins have weak anthocyanins, and the main veins on the back are crawling with sparse creeping villi. The growth potential of branches is strong. The bud burst rate is 91.6%, and the branches matured early and fully. The flower bud is well differentiated, and the first inflorescence usually emerges on the second or third node. The average fruiting branch rate is 96.4%, and the average number of the inflorescences per fruit branch is 2.65. The fruit clusters are cone and the density is mediumly compact. The fruit clusters are large with the average weight of 513.0 g. The shape of berries is elliptical with

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fuchsia peel, and the peel is medium thick and covered with thick fruit powder. The average single berry weight is 8.23 g, and the largest berry is 12.0 g. The flesh is little soft and juicy with strong muscat flavor. The quality of the berries is pretty good and nutritious. The soluble solid content of berries is 20.5%, the acid content is $3.24 \text{ g} \cdot \text{kg}^{-1}$ and the vitamin C content is $76.9 \text{ mg} \cdot \text{kg}^{-1}$. The variety shows vigorous growth and excellent flower bud differentiation. It is also easy to bear secondary fruits with good yield. The average yield is recommended 1250–1500 kg per 666.7 m². Under the greenhouse cultivation conditions in Haining city, the bud break date is mid-March, the ing date is late April, and the berry ripening date is early August (primary fruits) and October (secondary fruits). The ‘Beta’ rootstock is suggested to use for the new variety. The spacing would be (1.0–2.4) m × (2.5–3.0) m. The middle or long shoot pruning is suggested for Tiangong Liren with T-shape in winter pruning. It would be suitably cultivated in both northern and southern parts of China.

Key words: Table grape; New cultivar; Tiangong Liren; Mid-ripening; Muscat flavor

葡萄作为世界第二大水果,是我国重要的栽培果树之一,在国家实施脱贫攻坚和乡村振兴战略中发挥了积极作用^[1]。近年来我国鲜食葡萄产业发展迅速,栽培面积已连续多年位居世界第一^[2]。20世纪50年代开始,我国开始鲜食葡萄育种,取得了卓越的成绩,推动了我国葡萄产业的发展^[3]。在浙江、福建、江苏等南方地区,中熟主栽品种巨峰存在自然坐果难,如大小粒和落花落果严重等问题。保果膨大后虽穗形好,大小粒问题也得到缓解,但成熟时遇雷阵雨或台风易出现裂果。因此,选育自然坐果好,口感佳,香气纯而浓,抗病强的中熟欧美杂交种是南方葡萄主要育种方向之一。围绕浙江葡萄产业发展需求,浙江省农业科学院园艺研究所已培育出多个天工系列欧美杂交种葡萄新品种^[4-8]。为继续丰富葡萄品种和优化品种结构,又培育出了一个自然坐果好,玫瑰香味浓,管理省力的葡萄新品种天工

丽人(图1)。

1 选育过程

2011年,以巨玫瑰为亲本进行实生选种,8月份果实成熟后取出种子,获得自交种子156粒,12月进行种子沙藏处理。2012年3月播种育苗,获得自交小苗119株,2013年将小苗定植到浙江省农业科学院杨渡科研创新基地葡萄苗圃。2015年进入结果期进行考种,经过3 a(年)的观察和测定,在2017年筛选出综合表现优良,编号为C-13-3的紫红色型葡萄优系。该优系具有比亲本更易成花、玫瑰香更纯、不易软果等特点。2018年选用不同砧木进行嫁接扩繁,在黑龙江、北京和浙江等地进行多点试验。2019—2021年连续3 a开展了区域性品种比较试验,该优系产量和各性状均表现非常稳定,优于对照品种。2022年完成了农业农村部非主要农作物品



图1 成熟期的天工丽人葡萄

Fig. 1 The new cultivar Tiangong Liren at maturity

种登记,编号为[GPD葡萄(2022)330015],定名为天工丽人。

2 主要性状

2.1 植物学特征

天工丽人,欧美杂种,四倍体,两性花。嫩梢形态半开张,匍匐茸毛极密,花色苷显色强度弱。新梢状态半直立,节间背侧绿色,节间腹侧绿色带红条纹。直立茸毛疏,卷须分布不连续,长度中等。幼叶上表面为黄绿色,背面主脉间匍匐茸毛密。成龄叶小,心脏形,绿色,3~5裂,上裂刻轻度重叠,下裂刻

开张。叶缘锯齿双侧凸,锯齿长宽比大。叶柄洼闭合,叶脉花青素弱,背面主脉间匍匐茸毛疏。

2.2 果实经济性状

果穗圆锥形,紧密度适中,穗形较整齐,平均穗质量513.0 g。果粒形状为椭圆形,紫红色,成熟度一致,果粉和果皮中等厚。平均单粒质量8.23 g,最大果质量12.0 g,果皮较脆易分离,肉质较软,汁液多,果肉有浓郁的玫瑰香味。含糖量高,味甘甜,品质佳,种子数1~3粒,果梗与果粒分离较难。可溶性固形物含量高达20.5%,可滴定酸含量0.32%,维生素C含量76.9 mg·kg⁻¹(表1)。

表1 天工丽人和对照品种巨玫瑰、巨峰果实性状比较

Table 1 Comparison characteristics of Tiangong Liren, Ju Meigui and Kyoho

品种 Cultivar	果穗 形状 Cluster shape	果穗紧 密度 Cluster compactness	平均穗 质量 Average cluster mass/g	果粒 形状 Berry shape	平均粒 质量 Average berry mass/g	果粒 颜色 Color of berry	果皮涩味 Astring- ency of skin	香型 Flavor	果肉 质地 Flesh texture	w(可溶性 固形物) Soluble solid content/%	w(可滴定酸) Titratable acid content/%	w(维生 素C) Vc content/ (mg·kg ⁻¹)
天工丽人 Tiangong Liren	圆锥形 Cone	中Medium	513.0	椭圆形 Elliptic	8.2	紫红色 Red-violet	中 Medium	玫瑰香 Muscat	软Soft	20.5	0.32	76.9
巨玫瑰 Jumeigui	圆锥形 Cone	中Medium	505.3	椭圆形 Elliptic	8.0	紫红色 Red-violet	中 Medium	玫瑰香 Muscat	软Soft	18.8	0.39	81.3
巨峰 Kyoho	圆锥形 Cone	中Medium	317.9	椭圆形 Elliptic	9.3	紫红色 Red-violet	强 High	草莓香 Strawberry	软Soft	18.2	0.52	45.7

2.3 生长结果习性

枝梢生长势较强。萌芽率91.6%,枝条成熟早而充实。花芽分化好,结果枝率96.4%,每结果枝平均着生2.65个花序。自然坐果优良,不易落果,果穗紧密度适中,二次结果能力强。生产上,需要进行适当控制产量,提高果实综合品质,每666.7 m²产量在1250~1500 kg为宜。

2.4 物候期

在浙北设施栽培条件下,该品种萌芽期为3月上中旬,花期为4月下旬,转色期为6月上中旬,成熟期为8月上旬。从萌芽至浆果成熟需134~139 d,属中熟品种。

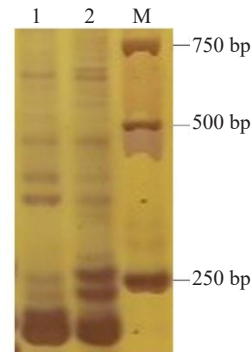
2.5 抗逆性与栽培适应性

天工丽人嫁接苗在5个区试点(浦江、平湖、海宁、富锦、北京)表现优良,树体健壮,成形快,结果性状和产量稳定,适应性强,南北方均可种植。在田间对炭疽病、白腐病和白粉病表现为中等抗性,虫害主要包括红蜘蛛、叶蝉、吸果夜蛾、绿盲蝽和蓟马,生产上需要注意对病虫害进行及时防治。

2.6 分子鉴定

利用SSR分子标记对天工丽人和亲本巨玫瑰

进行基因组鉴定分析,发现引物VMC16F3(正向引物5'-CCAATAAATGCAAACACATCTT-3',反向引物5'-ATATTAATGTTGCTCCTCCAC-3')扩增出可区分天工丽人和巨玫瑰的指纹图谱(图2)。



M. DNA marker; 1. 天工丽人; 2. 巨玫瑰。

M. DNA marker; 1. Tiangong Liren; 2. Ju Meigui.

图2 SSR引物VMC16F3电泳结果

Fig. 2 Amplified results of the primer VMC16F3

3 栽培技术要点

3.1 架式与整形

架型一般可用“V”字型或者“飞鸟”型,冬季整形采用“一”字型。设施栽培条件下,若需早期丰产,根据避

雨棚或大棚的实际大小情况,株行距设置为(1.0~1.2 m)×(2.5~3.0) m,每666.7 m²定植185~266株。2 a后,树体生长健壮,可隔株间伐,将定植数量减少一半,每666.7 m²定植92~133株。开花前花序上留5~6叶摘心,可促进坐果,平衡树势。为了增加叶片数量,花序以上的侧副梢留一叶绝后,留顶副梢,其余副梢全部抹除。待顶副梢长至5叶时,留4叶摘心。硬核期停止摘心,果实转色后,全园摘心。冬季修剪时,若多数枝条倒数第二节粗度在0.8 cm左右,下一年可选择自然坐果,按中长梢修剪,一般留4~8芽。若粗度在1 cm左右,需无核化处理,进行2~3芽短梢修剪。

3.2 花果管理

每个结果枝仅留1个花序(若树势偏旺,选择自然坐果则让其坐果后再疏穗,选择无核化处理可直接疏穗)。为了提高葡萄综合品质,如增加粒重,促进着色,提早上市,美化穗形,花前可整花序,去除副穗。并遵循“整边不整长”的原则进行剪花蕾,标准化生产留穗长12 cm。将整串葡萄修成圆柱形的单层果,每666.7 m²产量控制在1250~1500 kg为宜。若无穗形要求,可不用整花疏果。

3.3 肥水管理

10至11月施基肥,套种蔬菜的提早至9月份。以有机肥和生物菌肥为主,根据土壤特点,每666.7 m²施有机肥1~2 t,钙镁磷肥50~100 kg,硼砂、硫酸锌和微生物菌肥各2 kg。根据树势和结果情况,全年追肥5~6次。萌芽前施三元复合肥10~15 kg和尿素5 kg(仅用于无核化处理)。坐果后施水溶性复合肥5~10 kg和硝酸钙5 kg,用于膨大果实。隔7~15 d再施1次等量的肥。果实开始着色时,用高钾水溶肥5 kg,隔7 d再施1次,同时加入硫酸镁和硝酸钙各5 kg。若上色不够理想再施一次磷酸二氢钾5 kg。采果后需施肥强壮树体,可用磷钾二元复合肥5~10 kg。葡萄整个生长季对水需求量很大,萌芽前灌透水,开花前、幼果膨大期、转色前一周各灌1次水,采前控水防裂果,施肥时需配合灌水利于根系吸收养分。

3.4 病虫害防治

坚持以物理和生物防治为基础,结合化学农药进行综合防治。春季萌芽前用3~5 °Bé的石硫合剂进行全园杀菌处理;开花前后重点防治灰霉病,以防花序受感染影响产量;坐果后重点预防灰霉病、白粉病和炭疽病等;冬剪后进行清园,剥除树干老皮,将残枝落叶清除出园外集中深埋。在防治病害的同

时,整个生长季还需加强红蜘蛛、叶蝉、吸果夜蛾、绿盲蝽和蓟马等虫害的防治。

4 综合评价

天工丽人为中熟玫瑰香型欧美杂交种葡萄,果皮紫红色、果粒整齐、成熟一致、香味浓。易成花,易结二次果,管理省力,丰产性好、抗逆性较强,适宜在我国葡萄产区规模化种植。

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