

## 鲜食葡萄新品种脆红宝的选育

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**摘要:**脆红宝是由玫瑰香×克瑞森无核杂交选育出的晚熟无核葡萄新品种。果穗圆锥形,中等大,平均单穗质量292 g,最大穗质量520 g;果粒大、椭圆形,紫红色,着生中等紧密,平均粒质量4.5 g,最大粒质量7.0 g。果皮薄、韧;果肉脆且味甜,无玫瑰香味。该品种可溶性固形物含量( $w$ ,后同)为21.2%,总糖含量为18.15%,总酸含量为0.367%,糖酸比为49:1。在山西晋中地区9月中旬果实成熟。植株生长势较强。适应性及抗病性均较强,适宜在山西省太原以南葡萄适生区栽培。

**关键词:**葡萄;新品种;脆红宝

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### Breeding report of a new grape cultivar Cuihongbao

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**Abstract:** Cuihongbao is a new variety of late ripening seedless grape with excellent appearance and good quality. The seedling was derived from a cross between Muscat Hamburg and Crimson Seedless in 2004 in the Pomology Institute Shanxi Academy of Agricultural Sciences. It was initially selected in 2009 for its seedless, big fruit grain and bright color. After several years of observation, it was finally released as Cuihongbao after the validation by the Forest Tree Variety Registration Committee of Shanxi province in 2017. Cuihongbao grape belongs to Eurasian species. Its tender tip is semi-erect, yellow-green with a band of light purplish red, and its tip is fully open. Young leaves are green with erythema, anthocyanin is deeply colored and shiny, and the leaf surface is thin, and the back of the leaf has medium-density creeping and erecting. The mature leaves are pentagonal in shape, green in color, large in size, 14.2 cm in length, 19.0 cm in width, medium in thickness, five-lobed, deeply lobed, serrated on both sides, 0.92 cm in length, 1.0 cm in width and 0.92 in ratio of serrated length to width. The depression of the petiole is slightly overlapped in U shape. The surface of the leaf has no fluff and is smooth. The abaxial surface of the leaf has sparse rigid fluff. The degree of anthocyanin coloring of the veins is medium, and the Petiole is 12.96 cm long. Autumn leaves are yellow with rose patches. The first tendril of the new shoot was placed in the 7<sup>th</sup> section of the new shoot. The tendril was spaced and single-branched, with an average length of 5.4 cm. The first inflorescence usually born in section 3–4 and the second in section 4–5. The internode color is light red, and the node color is brownish red, the average length of the nodes is 11.8 cm, the longest is 15.2 cm, the shortest is 8 cm. The growth of the plant is moderate. The flower is bisexual. The fruit cluster is conical shape. The average cluster weight is 292 g and the biggest one reaches 520 g. The berry is purplish red color when fully ripe, the shape of berry is ellipse, the average berry weight is 4.5 g and the biggest one reaches 7.0 g. The thickness of the skin is thin and tough; the flesh is crisp and sweet. The number of residual stones is ranged from 1 to 2. The

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contents of soluble solids, total soluble sugar, total acid was 21.2%, 18.15%, 0.367%, and the sugar-acid ratio reached 49:1. In the Jinzhong area of Shanxi province, the time from bud breaking to harvest is about 150 d, its time of bud-burst at mid-April, and flowering at the ending of May, fully mature date at mid-September. Plants have strong growth potential, strong adaptability and resistance to disease, and are easy to cultivate. The germination rate was 66.1%, the average rate of fruiting shoot is 28.8%, the number of inflorescences per fruit branch was 1.41, and the natural pollination rate was 36.5%. Suitable cultivation area is in the south of Taiyuan, Shanxi. This variety can bear fruits next year after planted, has high yield potential. Cuihongbao is suitable for V shape frame or horizontal small frame, the plant and row spacing is (2.5–3.0) m × 1.0 m. Seedlings can be grown in nutrient bags or one-year-old Autumn seedlings. This variety is a seedless, which needs hormone treatment to increase the grain size in cultivation. Before the fruit is colored (the first 10 days of June in Jinzhong, Shanxi), the whole panicle and bagging of the panicle are carried out.

**Key words:** Grape; New cultivar; Cuihongbao

当今世界鲜食葡萄育种的目标是大粒、无核、优质、抗病及适应不同生态区<sup>[1]</sup>。目前,无核葡萄品种较少,育种进程慢,且在生产中存在着果实小、坐果率低等问题。相比于国外,我国无核品种更为缺乏,从国外引进的无核品种适应性较差,这些问题严重制约着无核葡萄产业的迅速发展<sup>[2]</sup>。面对全球鲜食葡萄市场竞争日益激烈、区域品种发展单一、市场供应集中、葡萄产品缺乏特色、同质化现象严重的现实,葡萄栽培品种优良化和科学区划是葡萄产业发展的基础<sup>[3-4]</sup>,山西农业大学果树研究所自1998年开展无核葡萄新品种选育研究,并且一直以优质、无核为主要育种目标,经过十余年的努力,已成功选育出无核葡萄新品种无核翠宝<sup>[5]</sup>、丽红宝<sup>[6]</sup>、晶红宝<sup>[7]</sup>等多个优良无核葡萄品种,脆红宝是山西农业大学果树研究所选育的又一优良无核葡萄新品种。现将该品种的选育过程、主要特性、配套栽培技术介绍如下。

## 1 选育过程

脆红宝系2004年杂交,组合代号为2004-5。该组合母本为玫瑰香,父本为克瑞森无核,2004年杂交,获杂交种子981粒。2004年12月10日对杂交种子进行层积处理,2005年初在20~25℃的变温条件下将层积后的杂交种子进行催萌,播种,出苗后定植于山西农业大学果树研究所葡萄育种圃。2009年开始结果,因其无核、粒大,当年初选为优系。2010年开始在山西省运城市盐湖区、太原市小店区、清徐县进行区域试验,同时进行品种、品系比较试验、生根试验、病害调查等系统性研究。结果表明,脆红宝丰产稳产,抗病性、适应性较强,是优良欧亚种晚熟

无核葡萄新品种。2017年通过山西省林木品种审定委员会审定,并定名为脆红宝(良种编号:晋SC-VV-015-2017)(图1)。



图1 无核葡萄新品种脆红宝

Fig. 1 A new seedless grape variety Cuihongbao

## 2 主要性状

### 2.1 植物学特征

脆红宝葡萄属欧亚种,植株生长势中庸。嫩梢半直立,黄绿色,伴浅紫红色条纹,梢尖全开张;幼叶绿色带有红斑,花青素着色深,有光泽,叶面茸毛稀,叶背具有中等密度的匍匐和直立茸毛。成龄叶片形状为五角形,绿色,大,叶片长14.2 cm,宽19.0 cm,

中等厚,五裂,上下裂刻深,叶缘锯齿形状双侧直,平均锯齿长0.92 cm,宽1.0 cm,锯齿长宽比为0.92,叶片横截面成V字形;叶柄洼轻度重叠呈U字形,叶表面光滑无茸毛,叶背面具有稀疏的刚状茸毛,叶脉花青素着色程度中等,叶柄长12.96 cm,秋叶颜色为黄色有玫瑰色斑块。第1卷须通常着生在新梢的第7节,单分叉,间隔性,平均长度为5.4 cm。第1花序一般着生在第3~4节,第2花序着生在第4~5节。枝条成熟时节间颜色为淡红色,节的颜色为棕红色,节间最长15.2 cm,最短8 cm,平均长度为11.8 cm。两性花。

## 2.2 果实经济性状

果穗穗形整齐,双歧肩圆锥形,中等大小,平均穗长、宽为16.1、11.7 cm,平均穗质量292 g,最大穗质量520 g;果粒大、椭圆形,着生中等紧密,纵、横径为2.10、1.64 cm,平均粒质量4.5 g,最大粒质量7.0 g;果皮紫红色,薄、韧;果肉脆,无玫瑰香味,味甜,可溶性固形物含量(*w*,后同)为21.2%,总糖含量18.15%,总酸含量0.367%,糖酸比为49:1,品质上等(表1)。

果穗与父母本及对照品种没有明显差异;果粒较父本克瑞森无核重0.5 g;含糖量分别比父母本高2.1和0.4个百分点;糖酸比较父母本高48.5%和75.0%。脆红宝穗形整齐,果粒大,色泽亮丽,品质上等,在无核葡萄中,果实外观和内在品质均优于目前生产上的主栽品种及父本品种克瑞森无核(表1)。

## 2.3 生物学特性

**2.3.1 生长结果习性** 脆红宝葡萄生长势较强,萌芽率66.1%,结果枝占萌发芽眼总数的28.8%,每果枝平均着生花序数1.41个,自然授粉率达36.5%。满足了早期结果和丰产的基本条件。据对山西农业大学果树研究所育种圃多年品种比较试验及区试生产丰产性调查,脆红宝在太原、晋中地区以每666.7 m<sup>2</sup> 1000 kg左右为宜;晋南地区产量以每666.7 m<sup>2</sup> 1500 kg左右为宜,产量过高会影响商品性,因此必须控制产量,生产优质果品。

该品种为无核品种,可对果实用激素进行膨大处理。在山西晋中6月上旬即果实上色前,整穗、疏粒结束以后,喷布杀菌剂并及时顺穗整理套袋。

**2.3.2 物候期** 脆红宝在山西晋中地区,4月中旬萌芽,5月下旬开花,7月20日左右果实开始着色,9月中旬果实完全成熟,生长期150 d左右。属晚熟无核葡萄新品种。新梢开始成熟期为7月下旬。

表1 脆红宝与亲本品种果实外观、内在品质性状比较  
Table 1 Main characteristics comparison among Cuihongbao and its parents

性状 Character	玫瑰香 Muscat hamburg	克瑞森无核 Crimson seedless	脆红宝 Cuihongbao
果穗形状 Cluster shape	双歧肩圆锥形 Conical with shoulder	双歧肩圆锥形 Conical with shoulder	圆锥形带歧肩 Conical with shoulder
平均穗质量 Average cluster mass/g	325	385	392
果粒形状 Berry shape	椭圆形 Elliptic	椭圆形 Elliptic	椭圆形 Elliptic
平均粒质量 Average berry mass/g	5.1	4.0	4.5
果皮颜色 Berry color	紫黑 Purple black	紫红 Purple red	紫红 Purple red
果肉质地 Flesh texture	软 Soft	脆 Crisp	脆 Crisp
果肉香味 Fragrance	玫瑰香 Muscat	无 No	无 No
<i>w</i> (可溶性固形物) Soluble solid content/%	20.80	19.10	21.20
<i>w</i> (总糖) Total sugar content/%	18.64	16.74	18.15
<i>w</i> (总酸) Total acid content/%	0.65	0.50	0.367
糖酸比 Sugar-acid ratio	28:1	33:1	49:1

## 2.4 适应性及抗病性

脆红宝适应性较强,易生根,抗病性中等,在山西省中南部地区及相似气候条件的地区,均能进行推广栽培,但要注意提升结果部位,6月下旬多留枝叶防日灼,并加强农业防治和常规药剂防治。

## 3 栽培技术要点

### 3.1 栽培架式与密度

脆红宝适宜V形架或水平小棚架栽植,行距为2.5~3.0 m,株距为1.0 m。栽植前按行距挖定植沟,要求沟宽、沟深均为60~80 cm;开沟后,按每666.7 m<sup>2</sup>施3000~5000 kg腐熟的有机肥与土均匀混合,回填于沟内,但为避免肥料混合不匀造成烧根,要注意最上层20~25 cm不要混肥料。苗木选用1年生秋苗、营养袋苗均可。

### 3.2 整形修剪

春季出土上架时,V形架整枝,架面高1.8 m,第1道铁丝距地面80 cm,第2道铁丝距第1道铁丝50 cm,两臂间距50 cm,第3道铁丝距第2道铁丝50 cm,两臂间距100 cm;水平小棚架整枝,架面高1.8~2.0 m,沿行及四周拉钢丝,然后40~50 cm拉钢丝,形成方格状。冬季修剪时,2~3芽短梢或极短梢修剪,相距15~20 cm留1个结果母枝,单枝更新。春季上架时,主蔓沿一个方向倾斜上架固定在铁丝上,在每个结

果母枝上选留2个结果新梢。

### 3.3 肥水管理

在春季,葡萄出土上架以后,施足萌芽肥、浇足萌芽水,以利于葡萄萌芽整齐。在山西晋中5月中下旬即葡萄开花前,追施1次鸡粪(每 $666.7\text{ m}^2$  1000 kg)、磷酸二铵(每 $666.7\text{ m}^2$  15 kg),进行浇水。在葡萄开花后,果粒黄豆粒大小时,结合浇果实膨大水,追施1次磷酸二铵(每 $666.7\text{ m}^2$  15 kg)。在果实转色至成熟期,施肥种类以复合肥和硫酸钾或速溶钾肥为主,在追施1次磷酸二氢钾(每 $666.7\text{ m}^2$  15 kg)的同时供给适宜水分,促进果实成熟和提高品质。果实采收后,结合“月子”肥(每 $666.7\text{ m}^2$  3000 kg),适当浇灌采后水。在葡萄冬剪前后,进行全年最后一次冬灌水。

### 3.4 病害防治

**3.4.1 农业防治** ①在葡萄萌芽前,刮除老翘皮防治冬后残留病虫等;②及时对新梢进行绑缚,加强肥水管理,增强树体抗性;③在11月冬剪以后,对病枝、病叶、病穗等病残体和杂草进行全面清理,集中销毁,从而铲除病虫生存环境和越冬场所。

**3.4.2 药剂防治** 苗木定植当年的主要任务是保护叶片,4—6月即葡萄生长前期,气候干燥,降雨少,葡萄病害少。6—7月随着雨季来临,易发生一些对葡萄生长影响较大的病害,如霜霉病、白腐病、炭疽病、黑痘病、溃疡病等,应及时喷布有效药剂包括代森锰锌、甲基硫菌灵、戊唑·多菌灵等,注意轮换用药。8—9月由于天气热转凉,要特别注意霜霉病的防治,可选用25%甲霜灵500倍液、霉多克1000倍液、58%雷多米尔锰锌600倍液交替使用,每15 d喷布1次;若发现有霜霉病,可选用霉多克600倍液,每15 d喷布1次。

根据葡萄病害发生流行的主要特点,定植2年及以上的葡萄结果树,每年芽开始膨大时喷1次3~5波美度石硫合剂,杀灭越冬病菌。花前(5月下旬)苯醚甲环唑3000倍液+80%代森锰锌(大生)800倍液+50%腐霉利(速克灵)+吡虫啉2000倍液。花后(6月中旬)苯醚甲环唑3000倍液+25%阿米西达1500倍液+灭扫利2000倍液。套袋前(6月下旬)喷布吡唑醚菌酯1500倍液,防治葡萄白腐病和灰霉病。8月中旬起主要防治霜霉病,选用58%瑞毒霉锰锌600倍液或石灰0.5~0.7量式的波尔多液,每10~15 d喷1次。

## 4 综合评价

脆红宝生长势较强,果穗穗形整齐,中等大小;果粒大小均匀,果皮紫红色,果肉细而致密、脆;糖度高,品质佳,商品性好;生根繁殖能力强,对激素反应敏感,抗病性、适应性均强,为优良晚熟无核欧亚种葡萄新品种。适宜V形架或水平小棚架栽培,短梢或极短梢修剪,可在全国葡萄适栽区推广种植。

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