

# 大果型、抗裂果枣新品种‘曙光8号’的选育

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**摘要:** ‘曙光8号’是在河北省沧州‘金丝小枣’资源中选育出的大果型、芽变、抗裂果的地方枣优良新品种。果实长圆形, 果个大, 平均单果质量14.02 g, 鲜枣可溶性固形物含量29.99%, 可食率96.47%。果皮深红色, 肉质疏松, 汁液多、甘甜。在河北沧州9月下旬进入成熟期, 丰产稳产, 抗裂果, 为优良的鲜食、制干品种, 适于河北平原枣区栽培。

**关键词:** 枣; 新品种; ‘曙光8号’; 大果型; 芽变; 裂果

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## ‘Shuguang 8’, a new Chinese jujube cultivar with large fruit and high resistance to fruit cracking

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**Abstract:** ‘Shuguang 8’, a new local jujube cultivar with big-fruit, bud mutation and resistance to fruit cracking was selected from ‘Jinsixiaozao’ resources of Cangzhou, Hebei province. It was initially selected in 2008 for its early bearing, big fruit, resistance to fruit cracking, high and stable yield, etc. After six years regional adapt ability testing a three sites (including Xianxian, Cangxian and Qingxian) from 2009 to 2015, it was finally selected in December 2015 and named ‘Shuguang 8’. The fruits are long oval and big shape with 34.87 cm in length and 29.29 cm in diameter, whose leaf color is deep green with a thickness of 0.38 m, the ratio of length and width is 1.76. The average fruit weight is 14.02 g, it is 2.16 times to that of the check variety. The jujube stone is flat spindle with weight of 0.49 g. The jujube stone is small, having a wine-colored peel, and flesh texture is loose, succulent, with a pleasant sweet flavor during crisp ripe period. The edible rate is 96.47%, and the dried rate is 52.1%. The soluble solid content reaches 29.99%, the titratable acid and the vitamin C content of fruit are 0.32% and 4 230 mg·kg<sup>-1</sup>, respectively. The whole growth period of jujube is 95–110 days, the average number of inflorescence and fruit is 2.9 per branch, 6 years after grafting, the average yield of ‘Shuguang 8’ is 27.9 kg. Experimental results show that the resistant ability of fruit cracking is strong, and only 8.7% of fruits is dehiscent in contrast with check variety, which is 58.6% in the same growing period. So it is a good variety not only for flesh but dried eating. In Cangzhou, it ripens in late September, and it is suitable for high and stable yield, fitting to plant the jujube trees in Hebei and Shandong province. In other parts, we can introduce to plant it. It adapts to sand soil, loam, clay soil and so on, the suitable soil pH range for tree growth is in 5.5–8.2. It can be normal growth when the soil salinity is 0.3% and annual precipitation is 400–700 mL. The conditions of establishment garden are flat land, open terrain, plenty of light, fertile soil, in addition to the good

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irrigation and drainage conditions. We can take multi head grafting technique in the top-grafted big trees, usually the trees are open-center shape or the small and sparse canopy shape, the pruning way are mainly branch-thinning, branch-pulling and so on. The florescence of 'Shuguang 8' is long, we can spray once jujube flower and fruit protector to improve fruit setting rate when it suffered by continuous high temperature weather during florescence. The main pests on jujube trees are jujube red-spider, *Apolygus lucorum*, Chihuo zao Yang, Peach Fruit Moth, *Carposina niponensis* Walsingham, *Asias halodendri* and *Euzophera batangensis* Caradja, the main disease on jujube trees are jujube rust, dehiscent fruit disease and *Macrophoma kuwatsukai*. We can select the high-efficiency, low toxicity, low residual pesticides and the other biological agents to pest control and prevention.

**Key words:** Chinese jujube ; New cultivar ; 'Shuguang 8' ; Large fruit type ; Bud mutation; Fruit cracking

枣树是我国第一大干鲜兼用果树,枣的营养物质丰富,营养价值高<sup>[1]</sup>。河北省沧州市是'金丝小枣'的主产区,该品种存在果个小、遇雨易裂果等突出问题。多年来各地栽培均以当地品种为主,造成品种严重分化退化、病虫害大面积发生,严重制约当地枣产业的健康和可持续发展。因此,新品种的培育成为当务之急。裂果是枣树严重的生理性病害,常年损失20%~50%,大发生时高达70%。培育抗病新品种是防控此类病害的重要途径<sup>[2]</sup>。河北省林业科学研究院科技人员将大果优质、抗病作为选育目标,开展新品种选育工作。

## 1 选育经过

2008年秋季,通过发动群众和现场考察,在沧州市献县郭庄镇田庄村陈述茂'金丝小枣'枣园内,发现了1株30 a生'金丝小枣'大树南侧1个直径5 cm左右的小枝,具有叶片浓绿、果个大、裂果少等特点(经考

证是2002年冬季低温和2003年的春季大雪低温刺激后新萌生的枝条)。被认定为优质、大果型、抗裂果并可鲜食和制干的优良芽变品种。为观察该品种的良好特性,2009—2015年进行了7 a系统评价主要农艺性状的研究,并在献县、沧县、青县等地开展区域化试验,进行物候期、果实特性等多种调查<sup>[3]</sup>,结果表明该品种各性状表现优良、稳定、一致,与对照'金丝小枣'相比,具有结果早、果大、抗裂果,丰产稳产等特点。2015年9月分别采集芽变枝条和原品种枝条,利用RAMP技术进行DNA多态性比较鉴定,通过12对引物扩增,得到明显DNA谱带,芽变枝条与对照未检测到差异谱带(图1),因此断定品种起源极为相近。2015年9月专家现场发现芽变品种具有显著的性状变异。该年12月通过了河北省林木品种审定委员会的审定,定名为'曙光8号'(冀S-SV-ZJ-010-2015)(图2)。

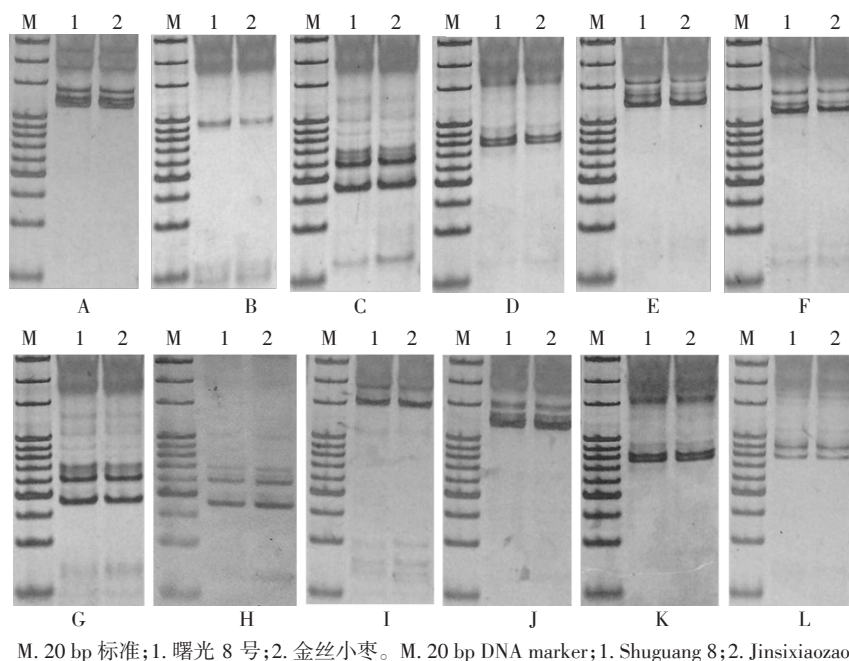


图 1 引物扩增结果  
Fig. 1 The amplification result with primer



图2 枣新品种‘曙光8号’

Fig. 2 A new Chinese jujube cultivar ‘Shuguang 8’

## 2 主要特性

### 2.1 植物学特征

该品种树势中庸偏强,发枝力较强。枣头紫褐色,枝面较光滑。皮孔近圆形中大,针刺长为0.6 cm,大部分当年即脱落。二次枝3~16节,平均8.8节,节间长3~8 cm。2 a生枝灰褐色,多年生枝深灰褐色。3 a生枣股抽生枣吊1~5个。枣吊长9~37 cm,着生叶片4~20枚。叶长圆形,深绿色(金丝小枣为绿色),光泽亮,叶长3.7~8.9 cm,叶宽2.1~5.9 cm,叶长与叶宽比值1.76,叶片厚度0.38 mm。叶基部圆形,叶尖渐尖,先端钝圆形。叶缘锯齿粗,具有2~4个1 cm叶缘。1个枣吊有3~11个花序,每序4~15朵花。花蕾成熟后为五角形,浅绿色。花径6.1~7.3 mm,初开时蜜盘黄色。

### 2.2 果实经济性状

大果型,平均单果质量14.02 g,为参照品种普通金丝小枣质量(6.5 g)的2.16倍,果个大小均匀。果实长圆形,纵径34.87 cm,横径29.29 cm。脆熟期果皮深红色,肉质疏松,汁液多、甘甜;可食率96.47%,制干率52.1%,宜制干和鲜食;枣核扁纺锤形,质量为0.49 g。干枣果皮鲜红,富光泽,果形饱满,富弹性(表1)。

表1 ‘曙光8号’与当地主栽品种生物学特性对比  
Table 1 Comparison of main biological characteristics between ‘Shuguang 8’ and reference cultivars

品种 Cultivar	单果质量 Fruit mass/g	$\omega$ (糖) Sugar content/%	$\omega$ (酸) Acid content/%	$\omega$ (维生素C) Vitamin C content/(mg·kg <sup>-1</sup> )	可食率 Edible rate/%
曙光8号 Shuguang 8	14.02	29.99	0.32	4 230	96.47
冬枣 Dongzao	12.80	18.70	0.30	4 650	96.00
金丝小枣 Jinsixiaozao	6.50	25.84	0.29	4 180	94.60

### 2.3 物候期

在沧州地区‘曙光8号’萌芽期为4月上中旬,盛花期在6月上旬,白熟期为8月中旬,果实成熟期9月下旬到10月上旬。完熟期比‘金丝小枣’提前10 d左

右。果实整个生长期为95~110 d。

### 2.4 生长结果习性和早期丰产性

平均枣吊长20.9 cm,着生11.8枚叶片。进入结果期早,3 a生枣股平均抽生枣吊数2.9个。一般高接换头后2~3 a即进入丰产期。15 a的当地金丝小枣树高接后第6年鲜枣每株产量达27.9 kg。

### 2.5 抗性及其适应性

‘曙光8号’抗裂能力强,2012—2015年连续4 a在3个区试点进行裂果调查,‘曙光8号’平均裂果率分别为5.8%、5.6%、5.8%、8.7%,对照‘金丝小枣’分别为26.7%、31.5%、48.1%、58.6%。

‘曙光8号’适应砂质土、壤土和黏土等多种土壤,土壤pH值适应范围为5.5~8.2,土壤含盐量0.3%时能正常生长。年降水量多为400~700 mm。‘曙光8号’是普通‘金丝小枣’芽变品种,适合河北、山东等‘金丝小枣’产区栽培,其他地区可引种试栽。

## 3 栽培技术要点

建园要选择地势平坦、地形开阔、光照充足、土壤肥沃、排灌条件良好的地块。大树高接换头可采取多头嫁接方式,待新梢长30 cm以上去掉绑缚塑料条,涂抹果树伤口愈合保护剂。常用树形为开心形、小冠疏层形,以疏枝、缓放和拉枝等修剪方式为主。幼树期修剪以培养树形为主,盛果期改善通风透光条件、培养结果枝组。‘曙光8号’花期长,6月10日左右开甲1次,开甲当天涂抹1次果树伤口愈合保护剂,20 d后再抹1次;花期若遇到连续高温天气,可喷施1次枣树保花坐果剂,提高枣树坐果率。

枣树的主要害虫有枣红蜘蛛、绿盲蝽、枣尺蠖、桃小食心虫、红缘天牛、皮暗斑螟等;病害有枣锈病、裂果病、轮纹病等。注意预防及防治,在药物防治上选用高效低(无)毒低(无)残留药剂以及其他生物制剂进行防治。

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