

## 早熟优质杏新品种中杏8号的选育

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**摘 要:**中杏8号是以1-10为母本、金太阳为父本杂交选育而成的早熟杏品种。果实卵圆形, 平均单果质量108.7 g, 最大单果质量约131.5 g; 果实较对称, 缝合线浅, 梗洼中深, 果顶平, 有果顶尖, 果皮有茸毛, 果皮中厚; 成熟时果皮底色橙黄色, 阳面鲜红色。果肉橙黄色, 肉厚质细, 多汁, 纤维少, 香气浓郁。可溶性固形物含量( $w$ , 后同)14.5%, 维生素C含量7.9 mg·100 g<sup>-1</sup>, 可溶性糖含量9.0%, 总酸含量1.2%。果核卵圆形, 褐色, 离核, 种仁较饱满, 可食率96.6%。河南兰考地区3月中旬开花, 5月下旬果实成熟, 11月中旬落叶。树体生长势强, 易成花, 以花束状果枝和短果枝结果为主, 自花结实能力差, 需配置授粉树。中杏8号外观美, 品质优, 果个大, 丰产稳产, 适应性强, 适合在河南及周边平原、丘陵、山地等杏栽培区推广种植。

**关键词:**杏; 新品种; 中杏8号; 早熟

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**Breeding report of a new superior early-maturing apricot cultivar Zhongxing No. 8**XIA Lehan<sup>1</sup>, LIU Jingmin<sup>2</sup>, CHEN Yuling<sup>1</sup>, CHEN Long<sup>1</sup>, HUANG Zhenyu<sup>1,3,4\*</sup>

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**Abstract:** Zhongxing No. 8 is a new early-maturing apricot cultivar selected from the crossing between 1-10 apricot and Sungold apricot. 1-10 apricot was obtained in 2005 by crossbreeding of Zhengzhou Fruit Research Institute, Chinese Academy of Agricultural Sciences, selected as the primary selection of superior cultivar in 2010, and widely cultivated in the suitable area of apricot in Henan Province. Sungold is a very early-maturing European sweet apricot cultivar introduced from the United States by Shandong Fruit Research Institute, and is widely cultivated in the suitable planting areas of apricot in China. Compared with the male parent Sungold, the fruit of Zhongxing No. 8 apricot has big size, smooth surface, bright color, thick and fine flesh, and rich aroma. This cultivar has excellent quality, very early ripening fruit, less physiological fruit drop, high and stable yield, strong adaptability and resistance. Zhongxing No. 8 apricot was approved by the Approval Committee for Improved Varieties of Forest Tree of Henan Province in December, 2023. The fruit is oval-shaped, with an average mass of 108.7 g and a maximum mass of 131.5 g. The average longitudinal diameter, transverse diameter and side diameter of the single fruit are 6.1 cm, 5.7 cm and 5.9 cm, respectively. The fruit has flat apex with a pointed tip, featuring nearly symmetry, deep suture line, and medium deep stem cavity. The fruit sur-

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face is smooth, the medium thick fruit peel is hairy. The fruit peel is orange with bright red on the sunny side when mature. The fruit flesh is orange in color, and delicate in texture with low fiber content, sweet and rich flavor, balanced sugar/acid ratio and intense fruity aroma. The fruit soluble solid content is 14.5%, the soluble sugar content is 9.0%, the total acid content is 1.2%, and the Vitamin C content is  $7.9 \text{ mg} \cdot 100 \text{ g}^{-1}$ . The fruit stone is round, brown and detached from the flesh. The average fresh stone mass is 3.4 g, with the stone length of 2.8 cm, and the stone width of 2.5 cm. The kernels are plump and the average mass of the kernel is 0.6 g, and the edible rate is 96.6 %. In Lankao area, Henan Province, the flower buds of Zhongxing No. 8 apricot start sprouting in early March, blossoming in mid-March, and reaching its peak flowering period in the mid-late March, with a flowering period of 7 to 10 days. The flower is showy, and has five light pink petals with one pistil and 26–35 stamens. The anther is light yellow with a lot of pollen. The leaf buds burst in late March and the leaves expand in early April. Tree defoliation starts in early-November, and all the leaves have fallen by mid-November. The vegetative growth period of the tree is about 220 days. The fruit ripens in late May, and the fruit development period is approximately 60 days. The tree posture is spreading and the tree vigor is strong. The flower bud formation is easy and the fruits are mainly borne on the short fruit branches. The pollination tree is needed for its poor self-fruitlet ability. The tree is highly and stably productive and starts to bear fruits in the second year after planting, and enters the high yield period in the fourth year. It exhibits strong adaption to undesirable circumstances, and is resistance to frost. It would be suitable for cultivation in Henan Province and other similar apricot-growing areas in China.

**Key words:** Apricot; New cultivar; Zhongxing No. 8; Early-maturing

杏(*Prunus armeniaca* Lam.)起源于中国,具有3000多年的栽培历史,品种资源丰富,果实品质优异,栽培面积和产量均居世界前列<sup>[1-2]</sup>。杏果实成熟早,色泽鲜艳,香气浓郁,风味独特,富含糖类、蛋白质、矿物质、维生素等营养物质,具有一定的保健作用,深受市场认可和消费者喜爱<sup>[3]</sup>。杏仁富含蛋白质、脂肪酸、苦杏仁苷等多种营养成分,是加工油料、食品、化妆品和药品等产品的重要原材料,在山区经济发展中同样发挥着重要作用<sup>[4]</sup>。杏树对于干旱、寒冷、贫瘠土壤具有较强的抗性,被誉为“抗旱先锋”树种,在中国北方生态环境建设中发挥着重要作用<sup>[1]</sup>。杏是兼具经济效益、社会效益及生态效益的经济林树种<sup>[5-7]</sup>。

目前,生产上广泛栽植的杏大多是自然实生品种,口感较好,但不耐贮运,成熟期集中,产量低且不稳。从国外引进的杏品种金太阳和凯特,丰产性好,但口感较酸,风味较差。近些年来,中国杏育种工作者相继培育出一系列杏品种<sup>[8-11]</sup>,但目前生产上早熟、硬肉、高产、优质、抗性强的鲜食杏品种仍相对短缺。为满足市场需求,中国农业科学院郑州果树研究所经过多年的系统培育,选育出早熟优质杏新品

种——中杏8号。

## 1 选育经过

中杏8号于2011年通过杂交选育而成,母本为1-10,父本为金太阳。1-10是中国农业科学院郑州果树研究所2005年通过杂交选育获得,2010年被定为初选优系,在河南省杏适栽区普遍栽培。金太阳是山东省果树研究所从美国引进的特早熟欧洲甜杏,在全国杏适栽区普遍栽培。

2011年,以1-10和金太阳作为亲本进行杂交,获得杂交种子106粒;翌年春季播种,培育出56株杂交苗;于2013年春季定植于中国农业科学院郑州果树研究所李杏种质资源圃,进行正常水肥管理,分别编号并开展调查。2016年,杂交单株开花结果,从果实经济性状、丰产性能等方面进行观察并鉴定,其中编号为5-1的杂交单株综合性状突出,表现为果形美观,阳面鲜红色,肉厚质细,纤维少,汁液多,芳香浓郁,可溶性固形物含量14.0%~15.5%,果实5月下旬成熟,丰产稳产,遂定为初选优系。同年,以大树高接,连续3年对高接树和实生母树进行观察,结果表明5-1综合性状表现稳定,定为复选优系。同

时,通过嫁接繁育苗木。2019年起在河南省新乡市新乡县、开封市兰考县、焦作市武陟县、濮阳市濮阳县等地进行区域试验或引种栽培。定植后第2年可开花见果,第4年进入丰产期。2023年12月通过河南省林木品种审定委员会审定,命名为中杏8号(良种编号:S-SV-PA-005-2023)(图1)。



图1 杏新品种中杏8号  
Fig. 1 A new apricot cultivar Zhongxing No. 8

2 主要性状

2.1 果实的经济性状

果实卵圆形,平均单果质量108.7 g,最大单果质量131.5 g。果实纵径6.1 cm,果实横径5.7 cm,侧径5.9 cm。果顶平,有果顶尖,缝合线浅,梗洼中深。果皮底色橙黄色,阳面鲜红色,果皮中厚。果肉橙黄色,肉厚质细,纤维少,汁液多,浓郁芳香,离核。可溶性固形物含量14.5%,维生素C含量7.9 mg·100 g<sup>-1</sup>,可溶性糖含量9.0%,总酸含量1.2%。果核卵圆形,干核平均质量3.4 g,核纵径2.8 cm,核横径2.5 cm。种仁较饱满,干仁平均质量0.6 g;可食率96.6%(表1)。

2.2 植物学特征

树体生长势强,树姿开张。树皮棕褐色,多年生枝条灰褐色,1年生枝条阳面红褐色,较粗壮,锐角斜生,光滑无毛。节间长1.8 cm,皮孔灰白色,椭圆形。花5瓣,花瓣下部浅粉红色。叶片长9.5 cm,叶片宽8.1 cm,叶表绿色,叶基钝圆形,叶片尖端夹角

| 表1 中杏8号与对照品种果实经济性状比较<br>Table 1 Comparison of economic characters for Zhongxing No. 8 and the control cultivar |                        |                                |                         |                            |                       |                                  |                                       |
|----------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------|-------------------------|----------------------------|-----------------------|----------------------------------|---------------------------------------|
| 品种<br>Cultivar                                                                                                 | 成熟期<br>Maturity period | 平均单果质量<br>Average fruit mass/g | 果形<br>Fruit shape       | 肉质<br>Flesh texture        | 汁液含量<br>Juice content | 风味<br>Flavor                     | w(可溶性固形物)<br>Soluble solids content/% |
| 中杏8号<br>Zhongxing No.8                                                                                         | 5月下旬<br>Late May       | 108.7                          | 卵圆形<br>Ovate            | 厚细<br>Thick and less fiber | 较多<br>More            | 香甜<br>Intense aromatic and sweet | 14.5                                  |
| 金太阳<br>Sungold                                                                                                 | 5月下旬<br>Late May       | 66.9                           | 近圆形<br>Approach globose | 细<br>Less fiber            | 多<br>Many             | 酸甜<br>Sour and sweet             | 12.7                                  |

中等钝角,叶缘尖锯齿,叶缘起伏中;叶柄长4.9 cm,叶柄暗红色,叶柄蜜腺数多于3个。

2.3 生长结果特性

中杏8号树势较强,树体较直立。经调查,兰考地区5年生树的平均树高为3.2 m,平均冠幅为3.0 m,平均地径为14.8 cm,干周为41.2 cm。当年新梢平均长35.7 cm,枝条平均直径为0.7 cm。初结果树以

中、长果枝结果为主,盛果期树以花束状枝和短果枝结果为主。1年生嫁接苗第2年开始少量结果,第3年可大量结果,第4年即可进入丰产期。经试验对比,中杏8号的产量优于对照品种金太阳(表2)。

2.4 物候期

在河南省兰考地区,中杏8号在3月初花芽萌动,3月中旬开花,3月下旬进入盛花期,花期7~10 d;

| 表2 中杏8号与对照品种产量比较<br>Table 2 Comparison of fruit yield for Zhongxing No. 8 and the control cultivars |                                                          |                               |                                                          |                               |                                                          |                               |
|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------|----------------------------------------------------------|-------------------------------|----------------------------------------------------------|-------------------------------|
| 品种<br>Cultivar                                                                                      | 3年生树 3-year-old tree                                     |                               | 4年生树 4-year-old tree                                     |                               | 5年生树 5-year-old tree                                     |                               |
|                                                                                                     | 666.7 m <sup>2</sup> 产量<br>666.7 m <sup>2</sup> yield/kg | 平均株产<br>The average strain/kg | 666.7 m <sup>2</sup> 产量<br>666.7 m <sup>2</sup> yield/kg | 平均株产<br>The average strain/kg | 666.7 m <sup>2</sup> 产量<br>666.7 m <sup>2</sup> yield/kg | 平均株产<br>The average strain/kg |
| 中杏8号 Zhongxing No. 8                                                                                | 672                                                      | 12                            | 1568                                                     | 28                            | 2240                                                     | 40                            |
| 金太阳 Sungold                                                                                         | 616                                                      | 11                            | 1400                                                     | 25                            | 2128                                                     | 38                            |



5月下旬果实成熟,果实发育期约60 d。3月底叶芽萌动,4月上旬展叶,11月初开始落叶,到11月中旬完全落叶,树体营养生长期220 d左右。

### 2.5 抗逆性与适应性

通过在新乡市、开封市、焦作市、濮阳市等地区开展区域试验,结果表明中杏8号适应性较强。在不同地区的砂土、壤土等不同类型土壤条件下均表现出成熟早、产量高、耐旱抗寒、耐瘠薄、抗病虫能力较强等特性。该品种适应范围广,在河南省各地区及周边省的杏栽培区域均可种植。

## 3 栽培技术要点

### 3.1 建园定植

选择地势较高、排水性好、交通便利的地块建园。土壤以土层深厚、土质疏松的壤砂土为宜,避免在核果类重茬地建园。选用芽眼饱满、根系发达、无病虫害的优质健壮苗木,栽植时间为秋季落叶后到冬季土壤封冻前,或翌年春季土壤解冻后到发芽前,定植后立即浇透水,在主干高度60~80 cm处选择饱满芽进行定干。在水土条件好的杏园,株行距为(3~4) m×(5~6) m;在干旱瘠薄的杏园,株行距为(2~3) m×4 m。中杏8号自花结实率较低,建园时搭配凯特、金太阳、玫香、早红艳等与其花期相一致的杏品种作为授粉树,可提高坐果率,配置比例一般为1:8~1:4。

### 3.2 整形修剪

中杏8号可采用自然开心形、疏散分层形或主干形的树形。冬剪时,对初结果树骨干枝的延长枝以轻剪长放为主,促进营养生长,增加分枝,扩大树冠,促进早成花早结果;对盛果期树的结果枝组进行回缩更新,以防止结果部位外移。夏剪时,对初结果树的新梢及时摘心改造成结果枝组,疏除细弱枝和下垂枝,保留健壮枝,以利早期丰产;对盛果期树则疏除徒长枝、竞争枝和过密枝,以改善树冠内部通风透光条件。

### 3.3 花果管理

在杏树的花蕾期和花期,根据果园立地条件、树势、肥水条件和管理水平确定留花量,以减少养分的消耗<sup>[12]</sup>。落花后2周需及时疏果,疏除畸形果、病虫果和拥挤的果实,保留发育正常的果实,一般长果枝留4~6个果,中果枝留2~3个果,短果枝留1个果或不留果<sup>[11]</sup>。通过疏花疏果可合理调控树体负载量,

获得均匀和品质优良的大果,保证连年丰产。

### 3.4 肥水管理

秋季9—10月施入以有机肥为主的基肥,幼树和初结果树每666.7 m<sup>2</sup>施基肥约2000 kg,盛果期树施用量加倍,单边开沟施肥。萌芽前追施高氮型复合肥,每株施0.5~1.0 kg,促进根系生长,增加新梢生长量,提高坐果率;果实硬核期追施高钾型复合肥,每株施1~2 kg,促进花芽分化和果实膨大;果实采收后追施氮磷钾复合肥,每株施1.0~1.5 kg,增加树体养分,为下一年丰产打好基础。土壤干旱时和施肥后应及时浇水,雨季需注意排水防涝<sup>[10]</sup>。果实采收前10 d停止浇水,以防止果实品质降低。

### 3.5 病虫害防治

对于病虫害,应遵循“预防为主,防治结合”的原则。通过合理整形修剪,加强水肥管理,增强树势,提高树体抗病虫能力。若采用药物防治,可选择高效、无毒或低毒、低残留的杀虫剂和杀菌剂,重点加强蚜虫、介壳虫等虫害,褐腐病、疮痂病、穿孔病等病害的防治。

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