

# 极早熟鲜食杏新品种‘金宇’的选育

武晓红<sup>1</sup>,陈雪峰<sup>1</sup>,王 端<sup>1</sup>,赵习平<sup>1</sup>,季文章<sup>1</sup>,  
袁立勇<sup>2</sup>,张宪成<sup>3</sup>,唐焕英<sup>2</sup>,马文会<sup>1</sup>,景晨娟<sup>1\*</sup>

(<sup>1</sup>河北省农林科学院石家庄果树研究所,石家庄 050061;<sup>2</sup>巨鹿县林业局,河北巨鹿 055250;<sup>3</sup>顺平县林业局,河北顺平 072250)

**摘 要:**‘金宇’是以‘宇宙红’为母本、‘金太阳’为父本杂交选育而出的极早熟鲜食杏新品种。果实卵圆形,果皮底色橙黄色,光亮洁净,果面有茸毛,果肉橙黄色,肉质细腻,汁液较多,味甜,口感浓郁,无涩味,香气淡;平均单果质量55.2 g,大果75 g;离核,苦仁。可溶性固形物含量(w,后同)为14.05%,总糖10.1%,总酸0.76%,可食率96.20%,果实带皮硬度12.6 kg·cm<sup>-2</sup>,维生素C 5.41 mg·100 g<sup>-1</sup>;品质上。果实发育期58 d,在石家庄地区,果实5月下旬成熟,营养生长期220 d;萌芽率73.74%,成枝率15.66%。该品种耐寒、耐旱、耐瘠薄,适应性强,较抗细菌性穿孔病和焦边病。常温下果实可存放5 d左右,耐贮运。可在河北省中南部及生态条件与之相似的华北地区、西北地区等地栽培。大树高接后第2年开始结果,高接第4年平均产量为27 t·hm<sup>-2</sup>,丰产性好。

**关键词:**杏;新品种;‘金宇’;极早熟;鲜食

中图分类号:S662.2

文献标志码:A

文章编号:1009-9980(2020)09-1437-04

## Breeding of a new very early-ripening apricot cultivar ‘Jinyu’

WU Xiaohong<sup>1</sup>, CHEN Xuefeng<sup>1</sup>, WANG Duan<sup>1</sup>, ZHAO Xiping<sup>1</sup>, JI Wenzhang<sup>1</sup>, YUAN Liyong<sup>2</sup>, ZHANG Xiancheng<sup>3</sup>, TANG Huanying<sup>2</sup>, MA Wenhui<sup>1</sup>, JING Chenjuan<sup>1\*</sup>

(<sup>1</sup>Institute of Shijiazhuang Fruit Tree, Hebei Academy of Agriculture and Forestry Sciences, Shijiazhuang 050061, Hebei, China; <sup>2</sup>Forestry Administration of Julu County, Julu 055250, Hebei, China; <sup>3</sup>Forestry Administration of Shunping County, Shunping 072250, Hebei, China)

**Abstract:** ‘Jinyu’ is a very early-ripening, fresh apricot cultivar. The seeds were derived from the cross of ‘Yuzhouhong’ and ‘Sungold’ in 2005 at experimental field. In the summer of 2005, the hybrid seeds were treated by reference to the method of fresh seed sediment storage immediately. In the spring of 2006, the seeds were sowed routinely. In 2007, the hybrid seedlings were transplanted in a wide-narrow row (1 m × 1 m × 2 m). The hybrid seedlings blossomed and bore fruit in 2008. In 2010, both pilot test and regional trials were conducted, and the trees had started to bear fruit in 2012. The observation and identification of 2005-yj134 was conducted for 3 consecutive years from 2012 to 2014, the fruit comprehensive characters were excellent. The tree was vigorous with semicircular crown and open tree gesture, purplish brown trunk, tan perennial branches. Annual branches were stout, the ratio of branch length to thickness was 182:1.24, internode length was 2.2 cm, the sunny side was brownish red, and night side was tawny and smooth, lenticels was transverse and small. Petals were pale pink, 5 mostly, purplish red calyx. Leaf blade was broadly rounded, apex acute, base cordate, margin neat, obtuse. The length and width of leaves were 8.5 cm × 8.0 cm, and leaves were thick, dark green, glossy, wavy. Main veins were light green. Petiole length was 3.1 cm, purplish red. The matured fruit was ovoid, orange. The average fruit weight is 55.2 g, maximum fruit weight is 75 g. Fruit top round flat, slice meat asym-

收稿日期:2020-04-26 接受日期:2020-06-11

基金项目:河北省科学技术研究与发展计划项目(16226313D-2);河北省农林科学院创新工程项目(C19C0701-03)

作者简介:武晓红,女,硕士研究生,研究方向为种质资源评价与新品种选育。Tel:13080413835,E-mail:hebeiapricot@126.com

\*通信作者 Author for correspondence. Tel:0311-87659937,E-mail:jingchenjuan@163.com

metry. The fruit ground color of fruit peel was orange, the surface was bright and clean, the appearance was beautiful. The flesh with more juice and tastes sweet was orange, had a less of fiber. The contents of soluble solid, total sugar, total acid, and vitamin C were 14.05%, 12.1%, 0.76% and 5.41 mg · 100 g<sup>-1</sup>, respectively. Fruit hardness with skin was 12.6 kg · cm<sup>-2</sup>, storage-resistant. The edible rate was 96.20%. The fruit had ovoid, bitter, free nucleus. In Shijiazhuang area, the fruit ripened in late May, with 58 d of fruit growth period and 220 d of vegetative growth period. The average perfect flowering rate was 85.06%, the average natural fruit setting rate was 68.31%, germination rate was 73.74% and branching rate was 15.66%, the main fruit was in the short fruit branches and bouquet fruit branches. In general, the fruit did not crack, and there was no browning inside the fruit. Self-pollination does not bear fruit. The average yield in the fourth year after high grafting was 27 t · hm<sup>-2</sup>. 'Jinyu' has good tolerance to cold, drought and barren, and strong adaptability. In the growing season, there were no obvious diseases on branches, leaves and fruits. 'Jinyu' was resistant to bacterial perforation disease and coke edge disease, basically no early defoliation phenomenon, production management generally can not spray preventive drugs. Fruits can be stored at room temperature for about 5 days, resistant to storage and transportation. 'Jinyu' can be cultivated in the central and southern part of Hebei province and the similar ecological conditions in north and northwest China. Self-pollination by 'Jinyu' produces no fruit, so it is necessary to paired pollinated trees. The ratio of main cultivars to pollinated cultivars was 3-4:1. The complete flowering rate and fruit setting rate of 'Jinyu' were high, so fruit thinning work should be carried out as early as possible.

**Key words:** Apricot; New cultivar; 'Jinyu'; Very early-ripening; Fresh-eating

杏是中国原产果树之一,因其果实成熟早、营养丰富,深受人们的喜爱<sup>[1]</sup>。河北省是杏的主产区,面积和产量分别约占全国的19%和14%,位居全国第二位。近年来,受大宗水果市场低迷的影响,杏树栽培面积和产量呈稳步增长趋势<sup>[2]</sup>。在产业发展过程中,中晚熟品种种植比例偏大,优质早熟品种比例偏小,果实早采现象严重,果实品质下降,制约了产业的正常发展。受消费市场驱动,杏成熟越早,商品价值越高<sup>[3]</sup>。近年来,多家育种单位均开展了极早熟杏新品种的选育工作,并成功选育了一批早熟杏品种,如'早金艳'<sup>[4]</sup>、'金荷'<sup>[5]</sup>、'春华'<sup>[5]</sup>、'京骆红'<sup>[6]</sup>等。但由于极早熟杏存在果个小、口味淡、适应性差、丰产性不稳定、贮运性不理想等问题,仍然不能满足市场需求。选育极早熟优良杏新品种成为重要的育种目标之一。

'金宇'是河北省农林科学院石家庄果树研究所育成的极早熟杏新品种,具有果实成熟极早、品质优良、极丰产等特点,综合性状优良。

## 1 选育经过

2005年在河北省农林科学院石家庄果树研究所杏种质资源圃内,以'宇宙红'为母本、'金太阳'为

父本进行杂交,杂交过程中采用连被去雄整树授粉技术提高授粉效率,当年得到杂交种子485粒。2005年夏季,将得到的杂交种子充分洗净后立即用鲜种沙藏法处理,2006年春季杏开花前按常规播种法进行播种,当年得到杂交苗205株。

杂交苗于2008年开花、结果,参照刘宁等<sup>[7]</sup>的种质资源描述规范,对杂交苗结果习性、果实经济性状、丰产性和抗性等多方面性状进行调查、记录,其中2005-YJ134单株表现较好,果实成熟期比父本'金太阳'至少提前5d,平均单果质量55.2g,果皮橙黄色,果面洁净,外观好,果肉细腻,纤维细少,内部品质优良,初选为优系,并高接扩繁种条。

2010年在果实鉴定、丰产性调查、树体适应性和病害调查的基础上复选为优系。2010年将2005YJ-134高接在石家庄果树研究所科技园区9a(年)生大树上进行中试。同时还在顺平县何家营、巨鹿县东韩庄等村通过大树高接进行区域试验。中试区和区试园于2012年开始结果,通过2012—2014年连续对中试区和区试园的2005-YJ134观察鉴定,该优系性状稳定,结果早,果实经济性状优良,完全花率和自然坐果率高,丰产性与'金太阳'相近,树势强壮,自然条件下无明显病害。

2013年6月1日,邀请同行专家对2005-YJ134进行了现场检测,之后定名为‘金宇’杏。2014年12月通过了河北省林木良种审定委员会的审定(编号:S-SV-PA-006-2014)(图1)。



图1 极早熟鲜食杏新品种‘金宇’

Fig. 1 A new very early-ripening apricot cultivar ‘Jinyu’

表1 ‘金宇’与对照品种果实主要经济性状比较

Table 1 Comparisons of main characters between ‘Jinyu’ and the control cultivar

品种 Cultivar	成熟期 Ripening date	平均单果质量 Average fruit mass/g	果形 Fruit shape	w(可溶性固形物) Soluble solid content/%	风味 Flavor	可食率 Edible rate/%	带皮硬度 Hardness with skin/(kg·cm <sup>-2</sup> )	产量 Yield/(kg·666.7 m <sup>-2</sup> )
金宇 Jinyu	5月30日 May 30th	55.2	卵圆 Ovate	14.1	甜 Sweet	96.2	12.6	2 286
金太阳 Golden sun	6月5日 June 5th	58.5	近圆 Nearly round	12.3	甜酸 Sweet-acid	95.3	11.8	2 089

质量2.09 g;仁苦,饱满。果实可食率96.20%,果实带皮硬度12.6 kg·cm<sup>-2</sup>,常温下果实可存放5 d左右,耐贮运(表1)。

## 2.2 植物学特征

‘金宇’树冠圆头形,树姿开张。主干紫褐色,多年生枝棕褐色。1 a生枝粗壮,枝长粗比为182:1.24,斜生,枝条密度中等,节间长2.2 cm,阳面棕红色,背面黄褐色,光滑,皮孔横生、较小。花瓣浅粉色,多数5瓣,花萼紫红色。叶片阔圆形,先端急尖,基部心形,叶缘整齐,钝齿状;叶长宽为8.5 cm×8.0 cm,叶片较厚,叶深绿色,有光泽,波状;主脉为浅绿色;叶柄长3.1 cm,紫红色。

## 2.3 生长结果习性

‘金宇’树势强,开始结果早,立地条件好的杏园,成苗栽植后第2年就可结果,第2年秋后调查,花芽与叶芽的比例为6:1,单芽与复芽的比例为1:1.08;第4年进入盛果期,株产鲜杏12.5 kg;大树高接后第2年结果,第4年株产40.5 kg。完全花率平均为85.06%,自然坐果率平均为58.10%。萌芽率73.74%,成枝率15.66%。以短果枝和花束状果枝结果为主,并随着树龄增长,花束状果枝有增加的趋势,果实成串状或分散状着生。生理落果轻或无,采前落果轻。一般年份不裂果,果实内部无褐变现

## 2 主要性状

### 2.1 果实经济性状

果实卵圆形,平均单果质量55.2 g,最大果质量75 g,果实大小一致;果实纵径4.89 cm,横径4.47 cm,侧径5.02 cm(表1)。果顶圆平;果实缝合线中,显著,片肉不对称;梗洼中。果皮底色橙黄,果面光亮洁净,外观美。果肉橙黄色;肉质细腻,纤维细少,汁液较多,味甜,口感浓郁,无涩味;可溶性固形物含量(w,后同)为14.05%,总糖10.1%,总酸0.76%,维生素C 5.41 mg·100 g<sup>-1</sup>。品质上。离核性好,近核处果肉无软化和褐变现象。核卵圆形,核面较平滑,平均纵径2.33 cm,横径1.95 cm,侧径1.22 cm,鲜核平均

象。自花授粉不结实。

### 2.4 物候期

在石家庄地区,‘金宇’在一般年份,于2月下旬花芽萌动,3月下旬开花,花期4~6 d,叶芽于3月下旬萌动,4月上旬展叶,果实于5月下旬成熟,果实发育期为58 d,10月下旬至11月上旬落叶,树体营养生长期约220 d。

### 2.5 抗病性与适应性

‘金宇’杏中试、区域试验期间,除在石家庄市北郊进行对比试验外,还先后在保定的顺平(梯田、土质较黏重)、邢台的巨鹿(沙土地)等地试栽,均生长良好,表现出较好的耐旱、耐瘠薄能力,适应性强。经中试、区域试验等多点多年的种植和观察,生长季节无明显的枝干、叶、果病害,较抗细菌性穿孔病和焦边病,基本无早期落叶现象,因此,生产管理中一般可不喷防病药物。

经区域试验和生产示范说明,‘金宇’杏可在河北省中南部及生态条件与之相似的华北地区、西北地区等地栽培,山区、丘陵、沙壤土、黏土地均可种植。

## 3 栽培技术要点

### 3.1 栽植密度

在土层深厚、肥沃、水利条件好的壤土地建园,

树体生长量大,株行距一般以(3~4)m×(5~6)m为宜。在土壤干旱瘠薄的沙荒地、山坡地及丘陵干旱地建园,树体生长量小,株行距一般以(2~3)m×(3~4)m为宜。

### 3.2 授粉树的配置

‘金宇’杏自花授粉不结实,需配置授粉树,不能用母本‘宇宙红’和父本‘金太阳’作授粉树,可选用‘新世纪’‘子荷’‘甘玉’‘骆驼黄’‘沧早甜杏2号’和‘凯特’等杏品种做授粉树,主栽品种与授粉品种比例为3~4:1。

### 3.3 整形修剪

树形采用疏散分层形或自然圆头形。对幼树应及时进行夏剪,主要是适当开张枝条角度,疏散分层形主枝基部与主干呈50°~60°角为好,自然圆头形主枝基部与树干呈45°~50°角为好。辅养枝和其他临时性枝条可适当大些;主要是剪(抹)去徒长枝(芽)、竞争枝(芽)、过密枝(芽)等;对长势旺的枝条要及时摘心,改造成结果枝组,或用于提早形成树形;成龄树每年应及时夏剪,主要作业是剪(抹)除徒长枝(芽)、竞争枝(芽)、密挤枝(芽)等,控制旺长,改善通风透光条件。冬剪时注意控制和平衡树势,控制上强和外强。

### 3.4 花果管理

疏果在盛花后20 d进行,先疏除病虫果和畸形果,因‘金宇’杏完全花率和坐果率均高,所以疏果应及早进行,并严格按标准要求疏果。适宜的留果标准为每3~5 cm留1个果,或全树平均每25~30片叶留1个果。

### 3.5 肥水管理

基肥要在采收后尽早施入,最晚不迟于9月份,施入量应占全年施肥量的70%以上。幼树和初结果树一般每666.7 m<sup>2</sup>施基肥2 000~4 000 kg,盛果期树的施肥量应按结果量大小而定,一般每666.7 m<sup>2</sup>施基肥5 000 kg,混入适量化肥(氮肥和磷肥)。追肥的关键时期有花前肥或花后肥、花芽分化肥(硬核期追肥)、催果肥。前期以氮肥为主(花前只追施氮肥),配合适量磷钾肥;果实采收前20 d主要施用速效性钾肥,以促进果实的第二次迅速膨大,提高产量和果实品质。每次施肥后要及时灌水。灌水的时期主要有花芽萌动期、果实膨大期、硬核期和封冻水。萌动期灌水最迟不能晚于花前10~12 d。

### 3.6 病虫害防治

在石家庄地区,4月10日至4月20日喷洒10%吡虫啉3 000~4 000倍和4.5%高效氯氰菊酯1 500倍的混合液防治蚜虫及其他害虫,麦收前后喷洒1.8%齐螨素4 000倍和4.5%高效氯氰菊酯1 500倍的混合液防治红蜘蛛,其他害虫如桑白蚧、杏球坚介壳虫、美国白蛾等杏树的常见害虫可用该害虫的有效药剂进行防治。萌芽前至芽萌动初期,喷布3~5波美度石硫合剂。落花期至果实采收前20 d,喷布70%甲基硫菌灵可湿性粉剂600~800倍液,或80%多菌灵可湿性粉剂1 200~1 500倍液,或70%代森锰锌可湿性粉剂500~800倍液,防治褐腐病、疮痂病。每隔15 d喷1次,连喷4~5次,几种药剂要交替使用。

### 参考文献 References:

- [1] 张加延,张钊. 中国果树志·杏卷[M]. 北京:中国林业出版社,2003.  
ZHANG Jiayan, ZHANG Zhao. Fruit trees in China: apricot roll [M]. Beijing: China Forestry Press, 2003.
- [2] 武晓红,赵习平,李立颖,袁立勇,张宪成,王胜男,梁爽,唐焕英. 河北省杏产业发展现状与建议[J]. 中国果树,2018(2): 82-85.  
WU Xiaohong, ZHAO Xiping, LI Liying, YUAN Liyong, ZHANG Xiancheng, WANG Shengnan, LIANG Shuang, TANG Huanying. Development status and suggestions of apricot industry in Hebei province[J]. China Fruits, 2018(2): 82-85.
- [3] 赵习平,武晓红,张宪成,袁立勇,李立颖,唐焕英,崔启志. 极早熟杏新品种‘金荷’[J]. 园艺学报,2018,45(7): 1417-1418.  
ZHAO Xiping, WU Xiaohong, ZHANG Xiancheng, YUAN Liyong, LI Liying, TANG Huanying, CUI Qizhi. A new very early-maturing apricot cultivar ‘Jinhe’ [J]. Acta Horticulturae Sinica, 2018, 45(7): 1417-1418.
- [4] 陈玉玲,冯义彬,陈昌文,乔书瑞. 杏极早熟新品种早金艳的选育[J]. 果树学报,2011,28(6): 1128-1129.  
CHEN Yuling, FENG Yibin, CHEN Changwen, QIAO Shurui. Breeding of early maturing apricot cultivar Zaojinyan[J]. Journal of Fruit Science, 2011, 28(6): 1128-1129.
- [5] 苑克俊,王培久,李圣龙,牛庆霖,葛福荣,孟晓焯,代华凤. 极早熟杏新品种‘春华’[J]. 园艺学报,2019,46(S2): 2745-2746.  
YUAN Kejun, WANG Peijiu, LI Shenglong, NIU Qinglin, GE Furong, MENG Xiaoye, DAI Huafeng. A new very early-ripening apricot cultivar ‘Chunhua’ [J]. Acta Horticulturae Sinica, 2019, 46(S2): 2745-2746.
- [6] 杨丽,孙浩元,张俊环,姜凤超,张美玲,王玉柱. 杏新品种‘京骆红’[J]. 园艺学报,2019,46(9): 1853-1854.  
YANG Li, SUN Haoyuan, ZHANG Junhuan, JIANG Fengchao, ZHANG Meiling, WANG Yuzhu. A new apricot cultivar ‘Jingluohong’ [J]. Acta Horticulturae Sinica, 2019, 46(9): 1853-1854.
- [7] 刘宁,刘威生,赵峰,张玉萍,郁香荷. 杏种质资源描述规范和数据标准[M]. 北京:中国农业出版社,2006.  
LIU Ning, LIU Weisheng, ZHAO Feng, ZHANG Yuping, YU Xianghe. Descriptors and data standard for apricot (*Armeniaca Mill.*) [M]. Beijing: China Agriculture Press, 2006.