

# 梨新品种‘新梨10号’的选育

位杰, 蒋媛, 林彩霞\*

(新疆生产建设兵团第二师农业科学研究所, 新疆铁门关 841005)

**摘要:** ‘新梨10号’是以‘库尔勒香梨’为母本、‘鸭梨’为父本进行人工杂交选育而成。果实卵圆形, 果形端正, 脱萼, 单果质量174.8 g, 果实底色浅绿色, 着鲜红色条纹或晕, 果面光亮。果肉乳白色, 肉质松脆, 汁液多, 石细胞少, 可溶性固形物含量12.5%, 可溶性糖含量8.5%, 可滴定酸含量0.17%, 维生素C含量39.2 mg·kg<sup>-1</sup>, 果实去皮硬度7.42 kg·cm<sup>-2</sup>, 风味酸甜适口, 品质上等。该品种树势中庸, 萌芽力高, 成枝力中等, 以短果枝结果为主, 连续结果能力强。果实发育期140~150 d, 库尔勒地区9月上中旬成熟, 货架期25 d, 冷藏条件下可贮藏5~6个月。该品种早果、丰产性强, 适应性广, 抗寒能力强, 适合在新疆南疆地区及其他冷凉地区栽培。

**关键词:** 梨; 新品种; ‘新梨10号’

中图分类号: S661.2

文献标志码: A

文章编号: 1009-9980(2017)05-0639-04

## Breeding of a new pear cultivar ‘Xinli No.10’

WEI Jie, JIANG Yuan, LIN Caixia\*

(Agricultural Scientific Institute of 2nd Division of Xinjiang Production and Construction Corps, Tiemenguan 841005, Xinjiang, China)

**Abstract:** ‘Xinli No.10’ is a new pear cultivar, which was bred by crossing ‘Korla fragrant pear’ as the female parent and ‘Yali’ as the male parent. It was initially selected in 1989 for its regular shape, smooth skin, fruit crisp and high yield characteristics. After regional adaptability testing at three sites (including Korla area, Tarim area and Yanqi area) over six years from 2009 to 2014, it was finally selected in 2014. We applied for the registration as a new cultivar in September 2014 and got identification certificate from Trees Variety Approval Committee of Xinjiang Uygur Autonomous Region in November 2014 and named ‘Xinli No.10’. The canopy was conical under natural conditions, the tree’s growth potential was flourishing, the tree position was open. Leaves are ovoid with average 10.63 cm length and 8.09 cm width, petiole was 3.1 cm in length. Leaf color was dark green. Flowers are pale pink, the relative position of petals was overlap. The petal shape was oval with more pollen. The average setting rate of single flower is 25% and the inflorescence forming fruit rate was 68.4% under the condition of natural pollination. The fruit was orbicular-ovate and regular, shed calyx. The average fruit weight was 174.8 g. The ground color of fruit skin was light green and with bright red stripe or red halo on the fruit surface. The fruit skin was smooth and shining. Its flesh was creamy white, fine and crisp. It was juicy, sour-sweet flavor and tastes delicious with little stone cell. The fruit quality was excellent. The content of soluble solid, soluble sugar, titratable acid and vitamin C was 12.5%, 8.5%, 0.17% and 39.2 mg·kg<sup>-1</sup> fresh mass. The sarcocarp hardness was 7.42 kg·cm<sup>-2</sup>. The vigor of growth of ‘Xinli No.10’ was middle, germinating capability was high, branch development capability and the production was higher. The fruit development period was about 140 to 150 days, and the fruit was ripening in early or middle of September in Korla, China. Its shelf life can reach 25 days, and it can be stored in cold storage conditions for 5 to 6 months. It has the characters of early fruiting and high yield, it begins flowering 2 years after planting and the productivity per 666.7 m<sup>2</sup> was 2 700 kg at 6 years after planting, and it has better adaptability and resistant to cold. It was a good cultivar and suitable for planting inside the south of Xinjiang and other cool and cold regions. The orchard should with

收稿日期: 2016-12-06 接受日期: 2017-02-08

基金项目: 河北省科技计划项目(16246327D); 新疆生产建设兵团第二师铁门关市科技计划项目(2015NYGG10)

作者简介: 位杰, 男, 助理研究员, 主要从事果树栽培生理生态与遗传育种研究工作。Tel: 15099227562, E-mail: 627weijie@sina.com

\*通信作者 Author for correspondence. Tel: 13565089090, E-mail: n.lcx@163.com

flat ground, neutral or sub saline-alkaline soil and high moisture and fertilizer retention. The planting space in the rows and plants are 4-5 m×3-4 m. The pollination cultivars are better with 'Kuerle Xiangli', 'Yali', 'Dangshansuli', etc. The suitable tree shape was evacuation and thin-long spindle. As the young trees grow vigorously, the erected branches should be pulled down. The pruning technology should be less cut back, leaving long branches, and with other pinching, bending or back spune methods to control the tree size and growth vigorous. 'Xinli No.10' has high rate of fruit setting under natural conditions, fruit thinning should be carried out within three weeks after fallen petal with a standard of leaving at intervals of 15-20 cm and fruit has good shape and bright color without any diseases and pests and mechanical injuries. Ratio of leaf-fruit should be controlled for 15-20:1 or ratio of branch-fruit should be controlled 1:1. The fertilizer should be provided properly according to the period of growth and development and the tree age, and the water should be provided properly according to the soil moisture, both drip irrigation and flood irrigation are available. *Euzophera pyriella* Yang, *Grapholitha molesta*, *Cydia pomonella* and *Valsa canker* should be regard as the most important pests and diseases to prevention and control by scientific using physical and chemical technology according to their occurrence rule.

**Key words:** Pear; New cultivar; 'Xinli No.10'

‘库尔勒香梨’是新疆梨系统中最具代表性的优良梨品种,因具有香味浓郁、皮薄肉细、酥脆多汁等特点而深受国内外消费者的喜爱。‘库尔勒香梨’的栽培地域性极强,栽培区域有限,因而是新疆果业产品中最具特色的果品,在促进农业增效、果农增收和出口创汇方面起着不可替代的作用,市场潜力很大,发展前景很好<sup>[1-3]</sup>。在梨育种上,‘库尔勒香梨’也作为一种优良的亲本材料被广泛应用,国内已有多家单位以‘库尔勒香梨’为亲本,利用杂交育种手段选育出了许多优良新品种,如‘红香酥’<sup>[4]</sup>、‘新梨7号’<sup>[5]</sup>、‘玉露香’<sup>[6]</sup>、‘红香蜜’<sup>[7]</sup>等,这些优良新品种在生产上有一定的栽培面积且有逐步扩大的趋势。

针对‘库尔勒香梨’存在的果小心大、果形不正、抗寒性差、品种单一等问题,新疆生产建设兵团第二师农业科学研究所从20世纪70年代起开展了以‘库尔勒香梨’为亲本的杂交育种工作,围绕“大果、抗寒、红色”的育种目标,采用杂交育种手段选育出了早果、丰产、抗寒、综合品质性状优良的梨新品种‘新梨10号’,丰富了‘库尔勒香梨’品种,形成了以‘库尔勒香梨’为龙头的系列产品,提升了‘库尔勒香梨’产业抵御灾害天气、病虫害以及市场风险的能力,促进了‘库尔勒香梨’产业的健康可持续发展。

## 1 选育过程

1981年以‘库尔勒香梨’为母本、‘鸭梨’为父本进行人工杂交,当年冬季对获得的杂交种子进行沙藏层积处理,1982年春季播种杂交种子,培育杂种实生苗。1984年将实生苗定植在新疆生产建设兵团第二师农业科学研究所梨种质资源圃中。1989年编号为‘82-27-20’的单株开始结果,表现为果形端正、果面光滑,肉质酥脆,丰产,确定为初选优株。1990年春季高

接在中试园中进行复选,1992年嫁接树开始结果,经连续多年观察,发现该单株果实经济性状及植株生长、丰产稳产性、适应性、抗逆性等农艺性状稳定。2009年开始在新疆库尔勒垦区、焉耆垦区、塔里木垦区等地布点进行品种比较试验和多点区试,经过对物候期、果实品质、丰产性状等特性的多年观察和综合评价分析,该优良单株在各地均表现出早果丰产、果形端正、品质优良、抗寒性强于香梨等特性,2014年11月通过新疆维吾尔自治区林木品种审定委员会认定,并定名为‘新梨10号’(良种编号:新R-SC-PB-004-2014)(图1)。



图 1 梨新品种‘新梨10号’

Fig. 1 A new pear cultivar 'Xinli No.10'

## 2 主要性状

### 2.1 植物学特征

‘新梨10号’树冠自然圆锥形,树姿较开张。幼树

生长健旺,1 a生枝绿黄色,多年生枝灰褐色,枝条着生姿态平斜;皮孔中密、大,卵圆形,节间平均长度2.8 cm,叶芽小,三角形,贴生;叶片平均长度10.63 cm,平均宽度8.09 cm,叶形指数1.31,叶柄平均长度3.1 cm。叶片卵圆形或椭圆形,叶基圆形或楔形,叶尖急尖,叶缘锐锯齿状,叶色深绿,叶姿水平,叶面有皱褶。花芽大,卵圆形,贴生,平均每个花序有7.2朵花,花蕾浅粉红色,花粉量大;花瓣卵圆形、离生,相对位置交错重叠。

2.2 生物学特性

新疆库尔勒地区3月下旬花芽萌动,4月上中旬进入盛花期(比‘库尔勒香梨’早2~3 d),盛花后7 d左右落花。6月落果现象极轻。9月上旬果实渐进成熟,9

月中旬为最佳采收期,与‘库尔勒香梨’相同。果实发育期140~150 d,10月底落叶,年生育期210 d左右。

2.3 生长结果习性

该品种树势中庸,萌芽力高,成枝力中等,以短果枝结果为主,占74.9%。在自然状态下极易成花,坐果率高,果台枝连续结果能力强。花序坐果率68.4%,花朵坐果率25%,平均每花序坐果2.2个(表1)。  
‘新梨10号’花粉量大,与其父本‘鸭梨’相似,可以与‘库尔勒香梨’互为授粉树,连续3 a人工点授的花序坐果率平均达94.6%。盛果期的‘新梨10号’短果枝比率、花序坐果率和花朵坐果率均高于‘库尔勒香梨’,而萌芽率和成枝力比‘库尔勒香梨’略低(表1)。

表1 ‘新梨10号’与‘库尔勒香梨’生长结果习性的比较

Table 1 Comparison of characters of growth and fruit between ‘Xinli No.10’ and ‘Kuerle Xiangli’

| 品种<br>Cultivar       | 萌芽率<br>Germination rate/% | 成枝力/条<br>Branch development capability/Twig | 长枝比例<br>Ratio of long branch/% | 中枝比例<br>Ratio of middle branch/% | 短枝比例<br>Ratio of short branch/% | 花序坐果率<br>Fruit setting percentage of inflorescence/% | 花朵坐果率<br>Fruit setting percentage of flower/% |
|----------------------|---------------------------|---|--------------------------------|----------------------------------|---------------------------------|--|---|
| 新梨10号 Xinli No.10    | 62.1                      | 3.2   | 7.8                            | 17.3                             | 74.9                            | 68.4   | 25.0  |
| 库尔勒香梨 Kuerle Xiangli | 63.0                      | 4.8   | 23.8                           | 12.4                             | 63.8                            | 34.8   | 6.7   |

嫁接后当年夏季采取拿枝、扭枝、摘心等缓势促花修剪手法,当年即形成花芽,第2年开花株率为57.4%,第3年开花株率达100%,平均株产3.2 kg,最高株产7 kg,6 a生树平均株产60 kg,最高株产80.6 kg,666.7 m<sup>2</sup>产

量可达2 700 kg(表2)。连续丰产能力强,大小年结果现象不明显,采前没有落果现象。多年调查结果表明,‘新梨10号’早果丰产性明显超过‘库尔勒香梨’。

2.4 果实经济性状

表2 ‘新梨10号’与‘库尔勒香梨’产量比较

Table 2 Productivity comparison between ‘Xinli No.10’ and ‘Kuerle Xiangli’

| 品种<br>Cultivar       | 2 a生树成花株率<br>Two year-old flowering rate/% | 3 a生树产量<br>Three year-old yield/kg        |   |                      | 6 a生树产量<br>Six year-old yield/kg          |   |                      |
|----------------------|--|---|---|----------------------|---|---|----------------------|
|                      |  | 平均株产<br>Average yield of individual plant | 最高株产<br>Highest yield of individual plant | 666.7 m <sup>2</sup> | 平均株产<br>Average yield of individual plant | 最高株产<br>Highest yield of individual plant | 666.7 m <sup>2</sup> |
| 新梨10号 Xinli No.10    | 57.4                                       | 3.2                                       | 7.0                                       | 144.0                | 60.0                                      | 80.6                                      | 2 700.0              |
| 库尔勒香梨 Kuerle Xiangli | 23.7                                       | 1.1                                       | 3.4                                       | 49.5                 | 29.8                                      | 65.2                                      | 1 341.0              |

果实卵圆形,果形端正,萼片脱落,萼洼平滑、浅、广,平均单果质量174.8 g,果形指数1.13,果实大小整齐一致。果实底色浅绿色,阳面着鲜红色条纹或晕,果面光亮,果皮薄,果点密,中等大小。果肉乳白色,肉质松脆,汁液多,石细胞少,风味酸甜适口,品质上等。可溶性固形物含量( $\omega$ ,下同)12.5%,可溶性糖含量8.5%,

可滴定酸含量0.17%,维生素C含量39.2 mg·kg<sup>-1</sup>,果实去皮硬度7.42 kg·cm<sup>-2</sup>(表3)。较耐贮藏,货架期25 d,冷藏条件下可贮藏5~6个月。

与‘库尔勒香梨’相比,‘新梨10号’的果实果形端正整齐,果面细腻光滑,果皮色泽和色相与‘库尔勒香梨’相似,单果质量、可滴定酸含量、维生素C含量高于

表3 ‘新梨10号’与‘库尔勒香梨’主要果实经济性状比较

Table 3 Comparison of main fruit characters between ‘Xinli No.10’ and ‘Kuerle Xiangli’

| 品种<br>Cultivar          | 果形<br>Fruit shape                 | 单果质量<br>Single fruit mass/g | 果实底色<br>Fruit ground color | 果实盖色<br>Fruit cover color | 果肉颜色<br>Flesh color | $\omega$ (可溶性固形物)<br>Soluble solid content/% | $\omega$ (总酸)<br>Titratable acidity content/% | $\omega$ (维生素C)<br>Vitamin C content/(mg·kg <sup>-1</sup> ) | $\omega$ (可溶性糖)<br>Soluble sugar content/% | 果肉硬度<br>Flesh firmness/(kg·cm <sup>-2</sup> ) |
|-------------------------|-----------------------------------|-----------------------------|----------------------------|---------------------------|---------------------|--|---|---|--|---|
| 新梨10号<br>Xinli No.10    | 卵圆形<br>Ovoid                      | 174.80                      | 浅绿色<br>Light green         | 条红<br>Striped red         | 乳白色<br>Creamy white | 12.5   | 0.17  | 39.2  | 8.5  | 7.42  |
| 库尔勒香梨<br>Kuerle Xiangli | 纺锤形<br>或椭圆形<br>Spindle or ellipse | 149.33                      | 绿色<br>Green                | 条红<br>Striped red         | 绿白色<br>Green-white  | 13.2   | 0.10  | 33.7  | 9.1  | 7.60  |



‘库尔勒香梨’,可溶性固形物含量、可溶性糖含量低于‘库尔勒香梨’。

### 2.5 适应性及抗逆性

该品种的区试结果表明,壤土、沙壤土、黏壤土都能适应栽培,抗寒性强于‘库尔勒香梨’。自2002年以来,新疆巴州地区连续发生5次大的冻害:2002年12月至2003年3月初(极端气温 $-25.6\text{ }^{\circ}\text{C}$ )、2008年1至2月初( $-22\sim-27\text{ }^{\circ}\text{C}$ 持续15 d)、2010年12月至2011年1月( $\leq-20\text{ }^{\circ}\text{C}$ 持续17 d,其中2011年1月10日绝对最低气温 $-28\text{ }^{\circ}\text{C}$ )、2012年1月( $\leq-21.2\text{ }^{\circ}\text{C}$ 持续12 d)、2012年12月至2013年1月( $\leq-22\text{ }^{\circ}\text{C}$ 持续23 d),造成‘库尔勒香梨’树体严重冻害,树体冻死、冻伤惨重,其中以初果期的‘库尔勒香梨’冻害最为严重,冻害株率达到68.7%,而‘新梨10号’树体未发生冻害,树体完整,生长结果正常。

## 3 栽培技术要点

### 3.1 建园和定植

建园时宜选择土壤深厚的壤土和沙壤土、土壤较肥沃的平地建园,土壤总盐含量不超过0.3%,有机质含量在1.0%以上,土壤宜为中性或微碱性。新疆库尔勒地区定植时期在春季或秋季均可,适宜的行株距为 $(4\sim5)\text{ m}\times(3\sim4)\text{ m}$ ,定植前挖直径为0.6 m、深0.5 m的坑,采用杜梨为砧木,定植后使根系与土壤紧密接触,然后踩实,浇透水。定植时不宜埋土太深。定植后第2年在离地面60~70 cm处进行嫁接。同时健全果园周边防护林设施,实行条田林网化建设,按2~3  $\text{hm}^2$ 为一个小区设置折风线的林网配置,改善梨园小气候。定植时需配置授粉树,‘鸭梨’‘砀山酥梨’‘库尔勒香梨’等品种均可。

### 3.2 整形修剪

‘新梨10号’适宜树形为疏散分层形或细长纺锤形。幼树生长旺盛,以开张角度为主,采用缓放、扭梢、摘心等措施促进成花,缓和树体生长势,达到早果丰产的目标。盛果期树要及时更新复壮结果枝,抬高枝条角度,保证每年有健壮的结果枝,保持树势稳健,防止树势衰弱。

### 3.3 花果管理

从花序分离期到开花期前进行疏花序。树冠内每15~20 cm空间留1.5~2.0个花芽,留强壮果枝上的花序,疏除瘦弱果枝上的花序;将花序的花蕾部疏除干净,保留莲座叶。于落花后1周开始进行疏果,3周内进行完毕,主要疏除畸形果(霜坏、冻伤果)、虫果、小果、碰伤或划伤的幼果;每间隔15~20 cm留1个果形端正、果面光洁、无病虫害和机械损伤的果实。叶果比15~20:1,或枝果比1:1。

### 3.4 土肥水管理

加强盐碱治理和土壤改良,每年施入有机肥培肥

土壤,施肥时期以8月下旬至10月中旬为宜,施用的有机肥应为充分腐熟的肥料,每666.7  $\text{m}^2$ 施肥量以3~5  $\text{m}^3$ 为宜,同时结合秋、冬灌治理盐碱。灌溉视生长季节土壤墒情而定,采用滴灌和漫灌均可,秋季结合施肥灌一次透水,入冬灌1次封冻水。11月对果园进行耕翻,深度在15 cm左右。树体生长发育前期以N肥为主,中后期以P、K、Ca、Mg肥为主,B肥于花前施入,施肥深度0.3 m左右。幼龄树施肥以P、K肥为主,不追施N肥,P、K比例为1:1,初果期树N、P、K肥施入比例为1:0.75:1,盛果期树N、P、K肥施入比例为0.6:0.5:1。

### 3.5 病虫害防治

坚持预防为主、防治结合的原则,按照主要病虫害发生规律,科学使用物理和化学防治技术,选用高效、低毒、低残留的符合无公害生产要求的农药。休眠期防治注意剪除病虫枝,刮除树干上的粗皮、病斑、老翘皮等,清除园内的枯枝、落叶、僵果,深埋地下或集中烧毁。萌芽前喷1次3~5波美度的石硫合剂。生长期重点加强优斑螟、梨小食心虫、苹果蠹蛾和腐烂病等病虫害的防治,在病虫传播和流行的初期有针对性地集中防治。

### 参考文献 References:

- [1] 何子顺,李芳芳,张绍铃,白茹,张虎平.‘库尔勒香梨’果实中脂肪酸和氨基酸变化及受套袋的影响[J].果树学报,2016,33(3):1-14.  
HE Zishun, LI Fangfang, ZHANG Shaoling, BAI Ru, ZHANG Huping. Changes of fatty acid and amino acid contents in fruit of *Pyrus sinkiangensis* ‘Korla Xiangli’ and the changes were affected by bagging[J]. Journal of Fruit Science, 2016, 33(3):1-14.
- [2] 赵晓敏,杨玉荣,李建鲲,袁峰,程俊嘉,李学文.1-MCP处理对库尔勒香梨采后果皮蜡质变化的影响[J].食品科学,2015,36(18):262-266.  
ZHAO Xiaomin, YANG Yurong, LI Jiankun, YUAN Feng, CHEN Junjia, LI Xuewen. Effects of 1-Methylcyclopropene treatment on postharvest changes in epicuticular wax of korle fragrant pear fruits during ambient temperature storage[J]. Food Science, 2015, 36(18):262-266.
- [3] 徐超,王雪梅,陈波浪,柴仲平,丁阔,霍凯丽.不同树龄‘库尔勒香梨’园土壤养分的特征[J].果树学报,2016,33(3):275-282.  
XU Chao, WANG Xuemei, CHEN Bolang, CHAI Zhongping, DING Kuo, HUO Kaili. Research on the characteristics of soil nutrients in a ‘Korla fragrant pear’ orchard with different ages for the trees[J]. Journal of Fruit Science, 2016, 33(3):275-282.
- [4] 李秀根,阎志红,杨健.优质抗病晚熟红皮梨新品种——红香酥[J].园艺学报,1999,26(5):347.  
LI Xiugen, YAN Zhihong, YANG Jian. A high-quality, disease-resistant and late mature red Chinese pear variety Hongxiangsu [J]. Acta Horticulturae Sinica, 1999, 26(5):347.
- [5] 刘建平,阎春雨,程奇,王新建,吴翠云.早熟、优质、耐贮藏新品种新梨7号选育研究[J].果树学报,2002,19(1):36-38.  
LIU Jianping, YAN Chunyu, CHENG Qi, WANG Xinjian, WU Cuiyun. Breeding of new pear variety Xinli No.7 with characters of early maturity, best quality and long storage life[J]. Journal of Fruit Science, 2002, 19(1):36-38.
- [6] 郭黄萍,李晓梅,张建功.优质中熟红梨新品种‘玉露香’(暂定名)[J].山西果树,2001(1):3-4.  
GUO Huangping, LI Xiaomei, ZHANG Jianguo. Superior mid-maturing new pear cultivar ‘Yuluxiang’ (tentatively named) [J]. Shanxi Fruits, 2001(1):3-4.
- [7] 魏闻东,田鹏,苏艳丽,陈滢良.优质红色梨新品种——‘红香蜜’的选育[J].果树学报,2013,30(1):173-174.  
WEI Wendong, TIAN Peng, SU Yanli, CHEN Mianliang. Breeding report on new red skin pear variety with good quality: ‘Hongxiangmi’ [J]. Journal of Fruit Science, 2013, 30(1):173-174.