

酸枣新品种‘蓝猫1号’和‘蓝猫2号’的选育

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摘要: ‘蓝猫1号’和‘蓝猫2号’酸枣是从野生酸枣资源中选育出的良种。2个品种的果实均为鲜红色,长圆形,大型果,‘蓝猫1号’单果质量4.86 g、可食率89%,‘蓝猫2号’单果质量4.78 g、可食率89%。‘蓝猫1号’鲜果可溶性固形物、总酸含量分别为25.10%和2.19%,‘蓝猫2号’的分别为27.05%和2.12%。‘蓝猫1号’在石家庄地区4月上中旬萌芽,6月中旬盛花期,9月中旬白熟期,果实成熟期9月下旬,11月上旬落叶;‘蓝猫2号’在石家庄地区4月上中旬萌芽,6月初盛花期,果实成熟期9月中旬,11月初落叶。‘蓝猫1号’和‘蓝猫2号’抗病性均较强,白熟期遇连续阴雨天气时‘蓝猫1号’裂果率要高于‘蓝猫2号’。适合河北省酸枣适生区栽培。

关键词: 酸枣;新品种;‘蓝猫1号’;‘蓝猫2号’

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Breeding of new wild jujube cultivars ‘Lanmao No.1’ and ‘Lanmao No.2’

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Abstract: ‘Lanmao No.1’ and ‘Lanmao No.2’, two new cultivars with excellent characteristics (such as big fruit size, beautiful color, and good taste quality) were selected from wild Jujube resources. Maternal trees of ‘Lanmao No.1’ and ‘Lanmao No.2’ were initially selected in 2005 for the strong resistance and excellent characters of fresh food. By the method of grafting, they were planted in experimental orchard in 2007. Through the observation about growing and fruiting, they were selected as superior lines. After regional adaptability testing at three sites (including Hebei Academy of Forestry Science, Tangshan Lanmao Drink Company and Qipanshan Fruit Farm, Lulong) over five years from 2010 to 2014, they were finally selected in 2015. Tree of ‘Lanmao No.1’ is vigorous with ramose crown and open tree gesture after bearing. Tree of ‘Lanmao No.2’ is vigorous with conical crown and upright tree gesture. Leaves of them are green, long oval, and acuminate. Flower is yellow-green and the amount is large. 2-8 flowers group as a cyme. Fruit of ‘Lanmao No.1’ is long elliptic, red color and big size. Fruit of ‘Lanmao No.2’ is long elliptic, bright red color and the size is little smaller than ‘Lanmao No.1’. Single fruit weight and edible rate of these two cultivars are 4.86 g, 89%, 4.78 g and 89%, respectively. Soluble solid content and total acid content of ‘Lanmao No.1’ are 25.10% and 2.19%, respectively. The corresponding data of ‘Lanmao No.2’ are 27.05% and 2.12%, respectively. Flesh of these two cultivars taste crisp, delicate, juicy, sweet and sour. ‘Lanmao No.2’ is sweeter than ‘Lanmao No.1’. The germination stage, full-bloom stage, white-ripe period, mature period and defoliation period of ‘Lanmao No.1’ are the first and second ten days of April, middle June, middle September, late September and the first ten days of November, respectively. The corresponding periods of ‘Lanmao No.2’ are the first and second ten days of April, early June, the first ten days of September, middle September and the beginning of November, respectively. Both of them have strong disease resistance. If fruits

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in white-ripe period meet continuous rainy weather, fruits will suffer from cracking. The resistance to cracking of 'Lanmao No.2' is better than 'Lanmao No.1'. suitable area in Hebei province for wild Jujube is suitable for these two new cultivars. Planting in poor sit condition, the first work is to improve sit condition. There are two ways can be used for orchard, the one is planting grafted seedlings directly, and the other one is planting seedling firstly, and then grafting. After first irrigation, plastic film should be covered in arid mountain area in order to reduce soil water evaporation. In north China, the weather from May to June is arid and rainless, so new plantings should be watered 1-2 times. The shape of open center with multiple main branches is applied for wild Jujube production. The heights of trunk and tree body of such shape are 30 cm and 2.5-3.0 m. The technique of reshaping and pruning is about erasing redundant buds, pinching, branch drawing, thinning dense branches, cutting back and adjusting density of branches. For orchards which have no irrigation but poor soil condition, some drought-resisting measures and fertilizers should be used for improving cultivation condition. Fast released fertilizer is applied for wild jujube orchard as mainly fertilizers. In April, 0.1-0.2 kg rapidly available nitrogen should be applied for each grafted tree before germination. In autumn, top dressing can combine with tillage and covering. The fertilizer amount of rapidly available nitrogen and phosphorus is 0.1-0.2 kg per tree which depends on tree size.

Key words: Wild jujube; New cultivar; 'Lanmao No.1'; 'Lanmao No.2'

随着社会的进步和人民生活水平的提高,健康饮食成了人们的日常生活方式,作为具有药用和保健双重价值的酸枣越来越受到了人们的喜爱,以酸枣为原料的酸枣汁、酸枣酒、酸枣茶等加工产品在市场上蓬勃兴起,对酸枣的产量和品质有了更高的要求,而酸枣作为野生果树资源基本处于自然生长状态,优良品种稀少^[1]。

酸枣同大枣一样基因杂合程度高,花蕾小,花药和雌蕊不易剥离,常规杂交育种比较困难^[2],2005—2007年,河北省林业科学研究院酸枣课题组对太行山、燕山地区16个县市的酸枣资源进行了多次广泛的调查、观测和取样,进行了酸枣优良品种的选育工作。经过将近10 a的筛选对比,选育出了一批性状优良的无性系和优良品种。

1 选育过程

2005年酸枣资源调查时在井陘县吴家窑乡金柱村发现一株果实个大、果肉松脆、风味酸甜适口、可食率高、丰产性好、树体适应性强、抗缩果病、抗瘠薄能力强的野生酸枣树,树龄不详,编号为井19号。在易县西山北乡于家庄村发现一果个大、果肉松脆、风味酸甜适口、可食率高,丰产性好、树体抗逆性适应性好、外观漂亮的酸枣植株,编号为易GY09。2007年分别采集两个植株的接穗,在河北省林业科学研究院采用坐地砧嫁接的方式建立试验园,对其生长情况和结果情况进行了连续3 a观察,观察结果表明其结果性状稳定,品质优良,确定为优系。2010年分别在河北省林业科

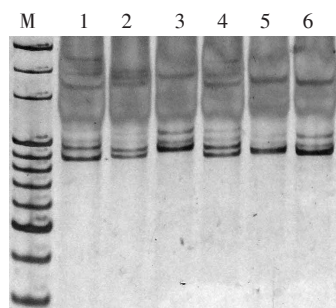
学研究院、唐山市蓝猫饮品集团有限公司和卢龙县棋盘山果树场建立试验园进行决选,2014年在鹿泉市南寨乡南寨村建立对比试验园。连续5 a对树体生长情况和果实性状的调查与分析以及区域试验,结果表明,井19和易GY09树体抗性较强,鲜食性状优良稳定,分别定名为'蓝猫1号'和'蓝猫2号'(图1、图2)。分子鉴定结果(图3)表明,'蓝猫1号'和'蓝猫2号'酸枣与对照'邢酸8号'在遗传上有显著不同。2015年12月通过了河北省林木良种审定委员会审定(编号:冀S-SV-ZA-016-2015;冀S-SV-ZA-017-2015)。



图1 酸枣新品种'蓝猫1号'
Fig. 1 A new wild jujube cultivar 'Lanmao No.1'



图2 酸枣新品种'蓝猫2号'
Fig. 2 A new wild jujube cultivar 'Lanmao No.2'



1. 蓝猫1号;2. 邢酸8号;3. 野生实生树;4. 蓝猫2号;5. 蓝猫3号;6. 蓝猫4号;M. 20 bp DNA。

1. Lanmao No.1; 2. Xingsuan No.8; 3. Wild fruit tree; 4. Lanmao No.2; 5. Lanmao No.3; 6. Lanmao No.4; M. 20 bp DNA.

图3 酸枣品种 RAMP 扩增电泳分析

Fig. 3 RAMP amplification electrophoresis of wild jujube

表1 不同酸枣品种果实外观性状比较

Table 1 Comparison of appearance among different wild jujube varieties

品种 Varieties	外观 Appearance	果形指数 Fruit shape index	单果质量 Single nut mass/g	可食率 Edible rate/%	出仁率 Kernel rate/%	ω (可溶性固形物) Soluble solid content/%	ω (总酸) Total acid content/%	风味 Flavor
蓝猫1号 Lanmao No.1	长圆、红色 Oblong, Bright red	1.11	4.86	89.0	21.29	25.10	2.19	酸甜适口 Sweet and sour taste
蓝猫2号 Lanmao No.2	长圆、鲜红色 Oblong, Bright red	1.14	4.78	89.0	25.84	27.05	2.12	偏甜 Partial sweet
野生酸枣 Wild jujube	圆形、红色 Circular, red	0.95	3.00	81.2	19.05	19.85	2.02	偏酸 Partial acid

张;‘蓝猫2号’树势较强,树姿较直立。主干灰褐色,当年生小枝嫩绿色。‘蓝猫1号’托叶刺较长、多,‘蓝猫2号’短而少。叶片长卵形,绿色,叶尖渐尖,叶基圆形。花黄绿色,2~8个密集成腋生聚伞花序,花量多,花蕾扁圆形。

2.3 生物学特性

2.3.1 物候期 ‘蓝猫1号’在石家庄地区4月上中旬萌芽,6月中旬盛花期,9月中旬白熟期,果实成熟期9月下旬,11月上旬落叶。‘蓝猫2号’在石家庄地区4月上中旬萌芽,6月初盛花期,果实成熟期9月中旬,11月初落叶。

2.3.2 生长结果习性 ‘蓝猫1号’耐瘠薄,抗寒缩果病能力较强,抗裂果能力稍差,嫁接第2年开始结果,5 a生树单株产量可达12.0 kg。‘蓝猫2号’树体适应性强,耐瘠薄,抗寒缩果病和裂果病能力强,嫁接第2年结果,5 a生单株产量达11.41 kg。

2.4 抗逆性

‘蓝猫1号’和‘蓝猫2号’抗病性均较强,在正常年份病果率分别为3.26%和3.65%,遇白熟期连续阴雨天气,‘蓝猫1号’裂果率要高于‘蓝猫2号’。

3 栽培技术要点

3.1 建园技术

建园采用嫁接苗建园和坐地砧嫁接建园2种方式。嫁接苗建园株距2.5~4 m,行距3~5 m,定植坑深25~30 cm,直径40 cm,栽植深度为苗圃育苗深度。华北地区5—6月份干旱少雨,空气干燥,新建园应补浇

2 主要性状

2.1 果实经济性状

‘蓝猫1号’果实颜色红色,长圆形,大型果,单果质量4.86 g,可食率89%;丰产性强;鲜果可溶性固形物含量、总酸含量分别为25.10%和2.19%。果肉松脆,汁液适中,酸甜适口,鲜食品质优良,可作为鲜食品种。

‘蓝猫2号’果实颜色鲜红,长圆形,大型果,果个较‘蓝猫1号’略小,可食率89%,丰产性强;鲜果可溶性固形物含量27.05%,总酸含量2.12%。果肉松脆,口味较‘蓝猫1号’偏甜,鲜食品质优良(表1)。

2.2 植物学特征

‘蓝猫1号’树势强壮,干性强,结果后树姿稍开

1~2次水。萌芽后,将苗干距地面30 cm以下的萌芽全部抹除。

坐地砧嫁接建园应选择立地条件相对较好的地方且生长旺盛的树做砧木。嫁接部位在距地面20 cm左右树干较通直处,嫁接时间华北地区为3月下旬到5月初,嫁接方法采用插皮接和劈接。

3.2 整形修剪

树形采用多主枝疏散开心形,干高30 cm左右,在中心干上分两层或螺旋状分布5~6个骨干枝,顶部开心,树高2.5~3.0 m,冠幅3 m左右,4~5 a完成整形。

3.3 病虫害防治

主要虫害有红蜘蛛、桃小食心虫、绿盲蝽,主要病害有枣锈病、枣裂果病、枣黑点病等^[3]。以防为主,化学防治所用农药应符合无公害果品生产要求。

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