果 树 学 报 2020,37(5):776-778
Journal of Fruit Science

DOI:10.13925/j.cnki.gsxb.20190545

优质高抗核桃新品种‘洛核1号’的选育

马贯羊[1],苗利峰[1],王树和[2],陈向阳[1],李 灿[1*],马克义[1],刘莹莹[1]

([1]洛阳农林科学院,河南洛阳 471023;[2]河南科技大学林学院,河南洛阳 471023)

摘 要:‘洛核1号’是从‘彼特罗’×‘中林5号’杂交子代中选育的高抗晚熟核桃新品种。坚果长椭圆形,大,平均单果质量16.46 g,单个核仁质量8.38 g,壳厚1.30 mm,出仁率达50.81%。壳较光滑,纵径47.33 mm,横径35.50 mm,侧径41.00 mm。缝合线略凸起,结合紧密。核仁饱满,黄色,口感浓香,无涩味,腹缝线结合紧密。果实生育期126 d,在洛阳地区9月15号左右成熟,侧芽结果率80%。‘洛核1号’对核桃炭疽病和核桃细菌性黑斑病表现为抗病,耐干旱、耐瘠薄能力较强。在河南省广大地区可进行生产性栽植,栽植当年可见雌花,第二年见果,高接大树第4年666.7 m^{2}平均产量203.72 kg。

关键词:核桃;新品种;‘洛核1号’

中图分类号:S664.1 **文献标志码**:A **文章编号**:1009-9980(2020)05-0776-03

Breeding report of a new walnut cultivar ‘Luohe No. 1’ with high quality and disease resistance

MA Guanyang[1], MIAO Lifeng[1], WANG Shuhe[2], CHEN Xiangyang[1], LI Can[1*], MA Keyi[1], LIU Yingying[1]

(*[1] Luoyang Academy of Agricultural and Forestry Science, Luoyang 471023, Henan, China; [2]College of Forestry, Henan University of Science and Technology, Luoyang 471003, Henan, China*)

Abstract: Walnut (*Juglans regia* L.) is a valuable woody nut and oil tree planted worldwide. In recent years, walnut has been severely damaged by anthracnose (caused by *Colletotrichum* spp.) and black spot (caused by *Xanthomonas campestris* pv. *juglandis*) with significant yield losses in China. Considering the severity of the diseases on walnut, a new walnut cultivar having high quality and disease resistance should be developed. ‘Luohe No. 1’ is a new walnut cultivar, which was bred by crossing walnut cultivar ‘petro’ as the female parent and ‘Zhonglin 5’ as the male parent in 2003 at experimental field. Six hundred and nineteen hybrid seedlings were obtained by sowing hybrid seeds in 2004. A superior individual with good eating quality, stable high yield and disease resistance was screened out in the hybrid offspring through good strain selection. From 2012 to 2018, regional tests were conducted at Luoyang, Ruyang, Yima and Qixian in Henan province. Regional tests showed that the genetic characteristics of the superior line were stable. We applied for the registration as a new cultivar in August 2018 and got identification certificate from Trees Variety Approval Committee of Henan province in December 2018, and named ‘Luohe No. 1’. The tree of ‘Luohe No. 1’ is medium-sized with upright tree body and strong branches. The type of leaves are odd pinnate compound leaves. The leaflets are long elliptic and opposite. There are 9-11 leaflets attached along an extension of the petiole. The main veins of leaflets are asymmetric on both sides, narrow on the inner side and wide on the outer side. The fruit shape is oval. The average weight of fruit is 16.46 g. The shell thickness is 1.30 mm. The shell is relatively smooth, with a longitudinal diameter of 47.33 mm, a transverse diameter of 35.50 mm and a side diameter of 41.00 mm. The suture is slightly raised and tightly combined. The average weight of kernel is 8.38 g. The kernel yield is 50.81%. The kernel is full, yellow, taste strong, no astringency, and very easy

收稿日期:2019-11-18 接受日期:2020-03-11

基金项目:河南省科技攻关项目(162102110080)

作者简介:马贯羊,男,高级工程师,研究方向为核桃遗传育种。Tel:13608654028,E-mail:mgy65758182@163.com

*通信作者 Author for correspondence. Tel:13939919660,E-mail:canli1962@sina.com

extraction in halves. Quality is excellent. The tree germinates in late March and the female floweres bloom in middle April. Male flowers bloom earlier than female ones. The fruit development period is 126 d and it ripens in middle September at Luoyang city in Henan province. Regional tests showed ‘Luohe No. 1’ is resistant to *Colletotrichum* spp. and *X. campestris* pv. *Juglandis*. The tree of ‘Luohe No. 1’ has strong adaptability and grow well at regional test sites in Henan province. This walnut cultivar can bear fruits next year after grafted, has high yield potential. Walnut trees should be planted in a deep, fertile, well-draining loam soil. The planting site should be prepared by levelling the ground and eliminating weeds. Trees should be spaced 4 m × 5 m apart. The configuration of pollinizer is the walnut cultivar ‘Lübo’. In general, the tree of ‘Luohe No. 1’ need pruning young trees during their first or second year in order to determine their shape. The shape is very important and can affect production quantity, quality and ease of harvesting or other farming activities.

Key words: Walnut; New cultivar; ‘Luohe No. 1’

核桃是河南省主要的经济林树种之一，栽培历史悠久，分布广泛，但核桃产业也出现了不少问题，壳太薄，核仁易腐烂变质，核桃园病害严重，种植经济效益不高。洛阳农林科学院培育出核桃新品种‘洛核1号’，个大、抗病、丰产、口感好，在核桃生产中有较大的推广价值。

1　选育过程

2003年4月，在洛阳农林科学院邙山核桃资源圃，利用从中国林业科学院引进的‘彼特罗’核桃为母本，‘中林5号’核桃为父本，进行了品种间的杂交，当年获得杂交种子725个，带青皮播种，次年出苗619株。经过初选、复选，在杂交子代中筛选出1个坚果综合性状优良、抗病性明显的单株优系。2012—2018年在汝阳县茹店村、义马市湾子社区和杞县岗顶村等地进行高接建立区域试验圃，经过连续观察，该优系遗传性状稳定，群体表现一致，具有明显的特异性，表现出个大、抗病、丰产、口感好等优点。2018年12月通过河南省林木品种审定委员会审定，命名为‘洛核1号’（图1、图2），审定编号：S-SV-JR-003-2018。

2　主要性状

2.1　坚果经济性状

如表1所示，果实长椭圆形，大，外果皮较光滑，纵径47.33 mm，横径35.50 mm，侧径41.00 mm。坚果果壳较光滑，缝合线略凸起，结合紧密。坚果大，平均单果质量16.46 g，单个核仁质量8.38 g，壳厚1.30 mm，出仁达率50.81%。核仁饱满，黄色，口感浓香，无涩味，腹缝线结合紧密（表1）。

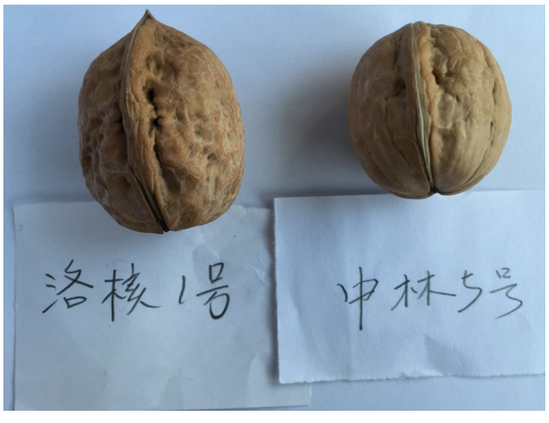

图1　‘洛核1号’与‘中林5号’坚果对比

Fig. 1　Comparison of the nut of ‘Luohe No. 1’ and ‘Zhonglin 5’

图2　‘洛核1号’结果状

Fig. 2　Fruit-bearing form of ‘Luohe No. 1’

2.2　植物学特征

树体中等，树姿半开张，分枝角度较大，主干浅棕色，树皮皮孔明显，小而突起。枝条棕褐色，皮孔

表1 ‘洛核1号’与对照品种‘中林5号’果实经济性状比较

Table 1 Comparison of nut economic characters between ‘Luohe No. 1’ and control ‘Zhonglin No. 5’

品种 Cultivar	成熟期 Mature period	侧花芽率 Lateral flower bud rate/%	坚果果形 Fruit shape	壳面 Appearance	平均单果质量 Average fruit mass/g	壳厚 Thickness of shell/mm	出仁率 Kernel rate/%	缝合线 Suture
洛核1号 Luohe No. 1	09-15	80	长圆形 Oblong	光滑 Smooth	16.46	1.3	50.81	微凸结合紧密 Microconvex tightly bound
中林5号 Zhonglin 5	09-07	85	圆形 Circular	光滑 Smooth	13.30	1.0	57.60	窄平结合紧密 Narrow flat tight union

小而突起。芽互生，有芽座，与2个副芽叠生，侧芽形成雌花率80%。奇数羽状复叶，小叶对生，9~11个。小叶长椭圆形。小叶主脉两侧不对称，内侧靠主干方向窄，外侧较宽。小叶叶脉两侧基部不齐，主脉内侧（靠主干方向）小叶基部较短，主脉外侧小叶基部较长，叶缘锯齿不明显。雌雄异花，雌雄同株，雄花穗状花序，花药有毛；雌花头状花序直立。

2.3 生物学特性

2.3.1 *物候期* 在洛阳市汝阳县3月中下旬萌芽，核桃雌花盛期为4月中旬，雄花盛期为4月上中旬，果实9月15号左右成熟，果实生育期126 d，10月下旬开始落叶，全年生育期约210 d。

2.3.2 *生长结果习性与产量* 树体中等，幼树干性适中，萌芽力中等，成枝力强，幼树以中、短果枝结果为主。配置绿波作为授粉树，丰产性较好，大小年结果现象不明显。高接大树，第2年树高达3 m，结果20个左右，第3年平均结果105个，平均株产1.7 kg；第4年平均结果275个，平均株产4.527 kg，666.7 m^2平均产量203.72 kg。

2.3.3 *‘洛核1号’适应性及抗病情况* （1）适应性。‘洛核1号’品种核桃适应性强，在我省的汝阳、宜阳、孟津、义马、杞县等地生长结果情况均表现优良。该品种耐寒，丰产性较好，果个大，果仁品质好，出仁率高，耐贮藏。

（2）抗病性。经过大田调查和接种试验，‘洛核1号’果实对核桃炭疽病和细菌性黑斑病均表现为高抗病水平。

3 栽培技术要点

3.1 定植时间、栽植密度与方式

定植时间分为秋栽和春栽。秋栽适合冬季比较暖和的地区，秋栽是在树苗落叶后至土壤封冻前进行，秋栽的苗木根系伤口愈合早、发芽早、缓苗快，有利于定植后的苗木生长。春栽适合冬季较为寒冷多风的地区，在土壤解冻后至苗木发芽前栽植为宜。株行距一般为4 m×4 m或4 m×5 m，每666.7 m^2栽植33~42株。山坡丘陵地带可适当密植，平原肥沃地带可适当稀植。整地方式为穴状整地，定植坑规格为80 cm×80 cm×80 cm。

3.2 授粉树的配置

‘洛核1号’核桃属于雄先型品种，雌花盛期为4月中旬，因此宜配置绿波做授粉树，配置比例为4~8:1为宜。

3.3 整形修剪

修剪时期在2月底、3月初进行，树形采用疏散分层形和自然开心形，定干高度一般为1.0~1.5 m。

3.4 肥水管理

施肥种类以农家肥和复合肥为主。施肥方法主要有环状施肥、穴状施肥、条状沟施肥和夏季追肥。灌水一般为3次，包括萌芽水、花后水、封冻水，灌水时，以湿透根系集中分布层为宜。

3.5 病虫害防治

冬季果园进行深翻，可以冻死大部分害虫和虫卵；核桃发芽前喷3~5度的石硫合剂。5—6月份主要防治核桃举肢蛾，成虫羽化出土前可用50%辛硫磷乳剂200~300倍液树下土壤喷洒，然后浅锄或盖上一层薄土；成虫产卵期每10~15 d向树上喷洒1次速灭杀丁2 000倍液。早春发芽前后，防治核桃溃疡病，间隔10 d左右，新菌安兑水1~3倍，涂抹4遍。

4 综合评价

‘洛核1号’品种核桃，在生产中表现出抗核桃细菌性黑斑病和炭疽病、个大、丰产、口感好等优点，具有良好的推广应用前景。

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