

## 酿酒葡萄新品种云酿3号的选育

罗仁斌<sup>1</sup>, 张武<sup>2\*</sup>, 李永平<sup>3</sup>, 白明第<sup>2</sup>, 陆晓英<sup>2</sup>, 董莉<sup>3</sup>, 唐卿雁<sup>4\*</sup>

(<sup>1</sup>楚雄彝族自治州农业科学院, 云南楚雄 675000; <sup>2</sup>云南省农业科学院热区生态农业研究所, 云南元谋 651300;  
<sup>3</sup>云南省绿色食品发展中心, 昆明 650000; <sup>4</sup>云南农业大学, 昆明 650201)

**摘要:**云酿3号是由华佳8号×东30-1杂交选育出的早熟酿酒葡萄新品种。果穗圆锥形, 平均穗质量130 g, 最大穗质量295 g, 穗长16.9 cm, 穗宽10.6 cm, 果粒椭圆形, 平均粒质量1.5 g, 纵径2.25 cm, 横径1.68 cm, 充分成熟时紫黑色, 无香味, 果皮厚度中等, 果皮涩味中等, 果肉软, 果粒与果柄易分离, 种子充分发育, 种子1~2粒。出汁率68.0%, 可溶性固形物含量( $w$ , 后同)20.0%, 总酸含量0.63%, 维生素C含量4.36 mg·100 g<sup>-1</sup>。在云南元谋干热河谷地区, 该品种2月下旬萌芽, 3月下旬开花, 始熟期5月中旬, 7月上旬成熟, 果实生育期90 d左右, 属早熟品种。植株生长势强, 花芽分化好, 两性花, 二倍体。较抗霜霉病和白粉病, 中抗灰霉病和白腐病。适宜在云南、西藏等年降雨量≤700 mm的葡萄酒产区推广种植。

**关键词:**酿酒葡萄; 新品种; 云酿3号; 早熟

中图分类号:S663.1

文献标志码:A

文章编号:1009-9980(2024)10-2130-04

## Breeding report of a new wine grape variety Yunniang 3

LUO Renbin<sup>1</sup>, ZHANG Wu<sup>2\*</sup>, LI Yongping<sup>3</sup>, BAI Mingdi<sup>2</sup>, LU Xiaoying<sup>2</sup>, DONG Li<sup>3</sup>, TANG Qingyan<sup>4\*</sup>

(<sup>1</sup>Chuxiong Academy of Agricultural Sciences, Chuxiong 675000, Yunnan, China; <sup>2</sup>Institute of Tropical Eco-Agricultural Sciences of Yunnan Academy of Agricultural Sciences, Yuanmou 651300, Yunnan, China; <sup>3</sup>Yunnan Green Food Development Center, Kunming 650000, Yunnan, China; <sup>4</sup>Yunnan Agricultural University, Kunming 650201, Yunnan, China)

**Abstract:** Grape wine is increasingly favored by consumers in China. Grape varieties are very important for wine making. Breeding new grape variety with good resistance to disease is necessary for grape cultivation in southern China. Yunniang 3 is a new early-maturing wine grape variety bred by Chuxiong Autonomous Prefecture Academy of Agricultural Sciences, Institute of Tropical Eco-agriclтурal Sciences of Yunnan Academy of Agricultural Sciences etc. A cross between Huajia 8 and Dong 30-1 was made in 2015. The hybrid trees began bearing fruits from 2018. The strain LV3-3 performed well. The field trials were conducted in Yuanmou, Yunnan province, and Basu, Xizang Autonomous Region from 2020. It was registered as a non major crop variety by the Ministry of Agriculture and Rural Affairs and named as Yunniang 3 in 2023. The surface color of the young leaves was green, and the mature leaves were pentagonal, 5-lobed, with light markings on both the upper and lower lobes. The leaf stalk depression is open. The shape of cluster was conical. The average cluster weight was 130 g, and the maximum cluster weight was about 295 g. The average cluster length and width was 16.9 cm and 10.6 cm. The berry density was moderate, with an average single berry weight was 1.5 g. The fruit clusters were elliptical. The fruit color was purple black with no aroma. The skin thickness and astringency was moderate. The flesh was soft. The berries were easily separated from from the stem. Each berry had 1-2 seeds. The juice rate was 68%, the soluble solids content was 20%, the titratable acid content was 0.63%, vitamin

收稿日期:2024-07-12 接受日期:2024-07-29

基金项目:云南省现代农业水果产业技术体系项目(2017KJTX0012-06、202002AA100007); 云南省科技人才与平台计划院士(专家)工作站项目(202305AF140216)

作者简介:罗仁斌,男,高级农艺师,主要从事葡萄育种与栽培技术研究工作。E-mail:630651535@qq.com

\*通信作者 Author for correspondence. E-mail:ymzhangwu@126.com; E-mail:tqyan801@163.com

C content was  $4.36 \text{ mg} \cdot 100 \text{ g}^{-1}$ . In the dry and hot valley area of Yuanmou, Yunnan, this variety bud burst began in late February, blooming in late March. The berries turned color in mid May, and matured in early July. The fruit growth period was about 90 days. The plant had strong growth potential, strong ability of flower bud formation. It had bisexual flowers and was diploid. It was strongly resistant to downy mildew and powdery mildew, moderately resistant to gray mold and white rot. It would be suitable for planting in wine producing areas with annual rainfall  $\leq 700 \text{ mm}$ , such as Yunnan province and Xizang Autonomous Region. The single stem hedgerow cultivation should be recommended.

**Key words:** Wine grape; New variety; Yunniang 3; Early-ripening

近些年来,中国葡萄与葡萄酒产业迅速发展,中国已经成为世界上的葡萄与葡萄酒生产大国,葡萄也成为中国主要栽培的果树树种之一<sup>[1]</sup>。但目前中国主栽的酿酒葡萄品种大多数为从国外引进的品种,缺少具有较高影响力且能适应中国风土的自育品种<sup>[2]</sup>。随着人民生活水平的提高和健康意识的持续增强,葡萄酒作为一种高雅、健康的饮品,日益受到消费者尤其是年轻人的青睐。

国内外对酿酒葡萄果实性状的相关研究已有报道,刘政海等<sup>[3]</sup>对威代尔与霞多丽葡萄杂交F<sub>1</sub>代果实性状的遗传倾向进行分析,发现杂交后代平均果粒质量呈趋小方向回归,酸糖含量呈现较广的分离且有趋向于高酸和低糖亲本的遗传趋势;Ban等<sup>[4]</sup>对葡萄一个杂交群体的98个个体的8个果实性状进行QTL分析,发现了一个与果粒质量相关的等位基因。目前国内酿酒葡萄以欧亚种赤霞珠、美乐、霞多丽等为主,自主选育的酿酒品种较少。由于欧亚种主栽品种适应地中海气候,抗病性相对较差<sup>[5-6]</sup>,成熟期一旦遇水就会造成果实腐烂、损失严重、酒质差,同时酿造出的酒体酒色不足,加工时需要染色品种调色<sup>[7]</sup>。

自2015年,笔者团队开始利用华佳8号等抗性品种与欧亚种品种杂交,开展抗性酿酒葡萄新品种的选育工作,选育出系列酿酒葡萄优系,与传统欧亚种酿酒品种相比较,抗霜霉病和白粉病的能力均有所增强,适应性更广,含糖量明显提高,酿造出的酒体颜色更深,酒感也比较符合中国消费者的口味<sup>[8]</sup>。

## 1 选育过程

云酿3号是2015年以华佳8号作母本、东30-1作父本杂交,采用常规杂交育种方式配置杂交组合,当年秋季收获杂交种子340粒。2016年3月在云南省双柏县大麦地镇云南同邦农业有限公司基地催芽

定植,育出杂交苗137株,当年5月上旬移栽成活并保存125株。2018年从中初选出两性花的LV3-3单株,2019年初,优选单株在云南省农业科学院热区生态农业研究所基地嫁接观察,经过田间农艺性状和酿酒试验综合评价,LV3-3丰产性好,充分成熟时可溶性固形物含量高,风味独特,酒色较深,被选为优良单株,2020—2022年开始陆续在云南省元谋、西藏八宿县等地进行布点区试试种。综合表现良好,2023年通过农业农村部非主要农作物品种登记,命名为云酿3号(图1),品种登记编号为GPD葡萄(2023)530006。

## 2 主要性状

### 2.1 植物学特征

云酿3号属种间杂种。新梢稍尖半开张,匍匐茸毛密度无或极疏,幼叶表面颜色绿色,成龄叶五角形,5裂,上下裂刻均浅。叶柄洼开张,不受叶脉限制,锯齿长,叶缘锯齿两侧直与两侧凸混合型。叶片横截面呈“V”形。1年生新梢呈明显的棱状。两性花,二倍体。

### 2.2 果实经济性状

该品种结果系数1.7,结果节位5~6节,果穗圆锥形,平均穗质量130 g,最大穗质量295 g,平均穗长16.9 cm,穗宽10.6 cm,紧密度中等,平均粒质量1.5 g,果实纵径2.25 cm,果实横径1.68 cm,果粒椭圆形,充分成熟时紫黑色,无香味,果皮厚度中等,果皮涩味中等,果肉软,果粒与果柄易分离,种子充分发育,种子1~2粒,维生素C含量(w,后同) $4.36 \text{ mg} \cdot 100 \text{ g}^{-1}$ ,总酸含量为0.63%,可溶性固形物含量20%,出汁率68%。云酿3号与其亲本主要经济性状比较见表1。

### 2.3 农艺性状

该品种对白粉病和霜霉病的抗性强于马瑟兰等欧亚种酿酒品种,高产稳产。但果实成熟期多雨易



图1 酿酒葡萄新品种云酿3号

Fig. 1 New wine grape variety Yunniang 3

表1 云酿3号与其亲本主要经济性状比较

Table 1 Comparison of main economic traits among Yunniang 3 and its parents

品种 Variety	果穗形状 Cluster Shape	果穗质量 Bunch mass/g	果粒形状 Berry shape	果粒颜色 Berry colour	果粒质量 Berry mass/g	w(可溶性固形物) Soluble solid content/%	生长势 Vigor	发育期 Time from germination to berry ripening/d
云酿3号 Yunniang 3	圆锥形 Cone	130.0	椭圆形 Elliptic	紫红色 Purple red	1.5	20.0	强 Strong	90
华佳8号 Huajia 8	圆锥形 Cone	89.0	圆形 Round	蓝黑色 Blue-black	0.8	17.6	强 Strong	130
东30-1 Dong 30-1	分枝形 Branch	600.0	长椭圆形 Long elliptic	鲜红色 Bright red	3.6	18.5	强 Strong	110

感溃疡病。栽培中要控制  $666.7 \text{ m}^2$  产量在 1200 kg 以下,雨季注意排水和病虫害防治,加强水肥管理,以提高果实可溶性固形物含量与品质。

#### 2.4 物候期

该品种在云南元谋干热河谷地区,2月下旬萌芽,3月下旬开花,萌芽率 67%,5月中下旬开始着色,7月上旬成熟,浆果早熟。在海拔 3090 m 的西藏八宿县林卡乡漫江精品酒业有限公司葡萄基地(属于怒江流域),4月上中旬萌芽,5月中下旬开花,8月底至9月中旬成熟。

#### 2.5 抗逆性及栽培适应性

该品种较抗霜霉病、黑痘病、炭疽病和白粉病,对白腐病、灰霉病和薔马抗性中等。在年降雨量  $\leq 700 \text{ mm}$  地区较有优势,在雨水偏多的地区和产量偏高的情况下,果实可溶性固形物含量降低,酒质变

差。

#### 2.6 综合评价

云酿3号生长势强,花芽分化容易,新梢成熟度好,高产稳产,较抗病。主要缺点:高产年份可溶性固形物含量偏低,而且成熟期多雨易感溃疡病。

### 3 栽培技术要点

#### 3.1 种植方式与种植密度

单臂篱架栽培。行距根据当地日照情况和机械化耕作水平而定,行距一般 2.0~2.5 m,株距 1.0 m。主干高度超过 1.0 m,以提高结果部位,减轻病害;种植密度以每  $666.7 \text{ m}^2$  定植 264~333 株为宜。

#### 3.2 整形修剪

冬季修剪:首先要保持树形相对稳定,留下更新枝,剪去衰弱的老枝蔓、徒长枝、纤细枝、病虫枝、枯

死枝。其次是根据架面空缺状况对留下的1年生新梢实行中、短梢修剪,而且对长梢平绑或弓形引缚。生长期修剪:首先早春萌芽后疏除多余的萌芽,同时对留下的萌芽在花序上方留4~6枚叶片及时摘心,促进新梢基部芽眼饱满和花芽分化。其次,如果主蔓比较衰老时,在主干上部要预留下一年度新主蔓和新的结果母枝,确保年度间产量稳定。再次是加强副梢管理,适时控制副梢生长。疏花疏果,控制产量,提高酿酒葡萄原料的质量。该品种在花序较小的年份,在开花前10 d左右,喷施 $8 \text{ mg} \cdot \text{L}^{-1}$ 的赤霉酸能够适当拉长酿酒葡萄的花序,既能适当提高产量,平衡年度间产量,也有利于控制树体生长中后期的病害。

### 3.3 肥水管理

成龄树8—9月顺行开挖30~40 cm深、25~30 cm宽的沟施基肥[包括农家肥(或有机肥)、磷肥、复合肥、硫酸钙等],其中碱性土地区应在基肥中加施硫黄粉( $20\sim25 \text{ kg} \cdot 666.7 \text{ m}^{-2}$ ),酸性土则加施石灰粉( $50\sim80 \text{ kg} \cdot 666.7 \text{ m}^{-2}$ ),以改善土壤条件。翌年早春萌芽后,前期滴灌追肥以氮肥和中微量元素肥(如硫酸亚铁、硫酸锌、流体硼、硫酸镁)为主,中后期在摘心的基础上再次补充一些硫酸镁和硫酸锌,增施磷钾肥、硝酸铵钙、硫酸锰和黄腐酸钾,促进枝条成熟老化。为了确保肥效充分发挥,施肥后10~15 d要保持土壤较湿润状态。

### 参考文献 References:

- [1] 雷昊. 酿酒葡萄‘北红’优株的遗传多样性研究[D]. 银川: 宁夏大学, 2023.  
LEI Hao. Study on the genetic diversity of the excellent strain of wine grape ‘Beihong’ [D]. Yinchuan: Ningxia University, 2023.
- [2] 谢军, 王荣, 徐美隆, 乔改霞, 刘玉娟, 余泽龙, 李毅. 酿酒葡萄香宝馨与赤霞珠正反交后代果实性状遗传变异分析[J]. 果树学报, 2023, 40(8): 1509-1522.  
XIE Jun, WANG Rong, XU Meilong, QIAO Gaixia, LIU Yujuan, YU Zelong, LI Yi. Analysis of genetic tendency of fruit traits in the reciprocal hybrids of wine grape Chambourcin and Cabernet Sauvignon[J]. Journal of Fruit Science, 2023, 40(8): 1509-1522.
- [3] 刘政海, 董志刚, 李晓梅, 谭敏, 杨镕兆, 杨兆亮, 唐晓萍. ‘威代尔’与‘霞多丽’葡萄杂交F<sub>1</sub>代果实性状遗传倾向分析[J]. 果树学报, 2020, 37(8): 1122-1131.  
LIU Zhenghai, DONG Zhigang, LI Xiaomei, TAN Min, YANG Rongzhao, YANG Zhaoliang, TANG Xiaoping. Inheritance trend of fruit traits in F<sub>1</sub> progenies of ‘Vidal’ and ‘Chardonnay’ of grape[J]. Journal of Fruit Science, 2020, 37(8): 1122-1131.
- [4] BAN Y, MITANI N, SATO A, KONO A, HAYASHI T. Genetic dissection of quantitative trait loci for berry traits in interspecific hybrid grape (*Vitis labruscana* × *Vitis vinifera*) [J]. Euphytica, 2016, 211(3): 295-310.
- [5] 禹方方, 张颖, 姜建福, 孙磊, 刘崇怀, 樊秀彩. 997份葡萄种质资源炭疽病抗性调查分析[J]. 中国果树, 2023(9): 114-116.  
YU Fangfang, ZHANG Ying, JIANG Jianfu, SUN Lei, LIU Chonghuai, FAN Xiucui. Investigation and analysis of anthracnose resistance in 997 grape germplasm resources[J]. China Fruits, 2023(9): 114-116.
- [6] 曾玉华, 刘梅秋, 肖姣娣, 张玲. 十一个国内酿酒葡萄品种资源霜霉病抗性调查[J]. 西北园艺(果树), 2021(10): 47-49.  
ZENG Yuhua, LIU Meiqiu, XIAO Jiadi, ZHANG Ling. Investigation on downy mildew resistance of 11 domestic wine grape varieties[J]. Northwest Horticulture (Fruit Trees), 2021(10): 47-49.
- [7] 林玉友, 蒋春光, 庞占荣, 刘月英, 万惠民, 李晓阳, 岳广旭, 孙洪强, 董丽. 不同酿酒葡萄品种抗病性调查分析[J]. 农业科技通讯, 2011(12): 93-95.  
LIN Yuyou, JIANG Chunguang, PANG Zhanrong, LIU Yueying, WAN Huimin, LI Xiaoyang, YUE Guangxu, SUN Hongqiang, DONG Li. Investigation and analysis of disease resistance in different wine grape varieties[J]. Bulletin of Agricultural Science and Technology, 2011(12): 93-95.
- [8] 李建芳, 李益. 中国葡萄酒产业特点及竞争策略[J]. 中外葡萄与葡萄酒, 2018(5): 62-67.  
LI Jianfang, LI Yi. The characteristics and competitive strategies of Chinese wine industry[J]. Sino-Overseas Grapevine & Wine, 2018(5): 62-67.