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中华猕猴桃早中熟新品种赣金2号的选育

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摘 要:赣金2号是从江西省野生中华猕猴桃(*Actinidia chinensis*)自然变异群体中选育而成的早中熟新品种。果实广椭圆形,果面茸毛较易脱落,果喙微钝凸。一个花序中的侧花在开花时会自动脱落,仅主花能正常坐果,果实平均单果质量93.60 g,最大单果质量127.80 g。果肉髓射线明显,呈黄绿色。果实可溶性固形物含量(*w*,后同)为19.20%,干物质含量为18.77%,可滴定酸含量为0.98%,抗坏血酸含量为1.88 mg·g^{-1}。在江西省宜春市,盛花期为4月中旬,果实成熟期为9月中下旬。植株生长势旺盛,具有较强的耐热、抗旱性,果实大小均匀一致,综合性状优良。盛果期产量为28.50 t·hm^{-2}。

关键词:中华猕猴桃;新品种;赣金2号;单花结果型;早中熟

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Breeding report of a new early-mid-maturing kiwifruit cultivar Ganjin 2

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Abstract: Kiwifruits belong to the family Actinidiaceae and the *genus Actinidia*. Among them, *A. chinensis* is currently the most widely cultivated species. However, cultivars of *A. chinensis* primarily harvest in late August to early September (the early-maturing type) or late October to early November (late-maturing type). The concentration of harvest periods and the short product supply window limit the effective development of *A. chinensis* germplasm resources. Additionally, the inflorescences are mainly panicles, which require manual thinning of flowers and fruits to promote normal fruit development, resulting in the increase of labor costs. Therefore, medium maturity and single-flower fruiting traits are important breeding objectives for *A. chinensis*. Our research team conducted a detailed survey and germplasm collection of the wild kiwifruit resources in the major mountainous areas of Jiangxi Province. In Yihuang County, Jiangxi Province, we discovered a single plant with medium maturity and single-flower fruiting at an altitude of 548 m, designated YH-2. After grafting and identification, we systematically observed and evaluated its biological characteristics, key fruit traits, and genetic stability. The results from three consecutive years of trials showed that the YH-2 exhibited stable medium maturity and single-flower fruiting traits. In Fengxin County (at an altitude of 75 m), the full bloom was in mid-April, and the physiological maturity of the fruit was in late September, with the fruit development period spanning of 155−160 days. The fruit was broadly elliptical, with a single-flower fruiting rate exceeding 95%. The fruit length was 4.30 cm, the diameter was 4.25 cm, and the fruit shape index was 1.01. The fruit had a slightly blunt, convex beak, and the pedicel length was 4.30 cm. The average fruit weight was 93.60 g, the largest fruit was 127.80 g. The fruit skin was brown, covered with a moderate amount of short yellowish fuzz, while the flesh was yellow-green with distinct pith rays. The fruit quality was excellent, the soluble solid content (SSC) was 19.20%, the dry matter (DM) was 18.77%, the titratable acid (TA) was 0.98%, and the ascorbic acid (AsA) was 1.88 mg·g^{-1}. The fruits had good storage potential and could be stored at room temperature for 30−45 days. The one-year-old branches were brownish-

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yellow, with an average internode length of 4.41 cm and a diameter of 0.95 cm. The fruit-bearing shoots were brown, with an average internode length of 2.36 cm and a diameter of 0.81 cm. Both the upper and lower surfaces of the young leaves and petioles were anthocyanin-colored, with pointed leaf tips and a gradually narrowing base. The mature leaves were broadly ovate with flat or slightly concave tips, measuring 9.86 cm in length and 12.19 cm in width, with petioles of 6.11 cm. The flowers were solitary or in cymose inflorescences, with 1−3 flowers per inflorescence. The petals were white, with 5−7 petals per flower. The fruiting rate of the shoots was high (91.5%), and the plant exhibited strong continuous fruiting ability, with normal vegetative branches becoming fruiting shoots in the following year. The fruit setting rate exceeds 95%, and flower and fruit drop were very low. The fruit matured in late September. The yield during the full fruit-bearing period was 28.50 t·hm^{-2}.

Key words: *Actinidia chinensis*; New cultivar; Ganjin 2; Single-flower fruiting type; Early-mid-mature

猕猴桃（*Actinidia*）是原产于中国且极具特色的浆果，因其果实富含抗坏血酸、膳食纤维及多种矿物质元素，深受消费者喜爱。其中，中华猕猴桃（*A. chinensis*）是猕猴桃属栽培较为广泛的一个种，绝大部分品种为早熟（8月下旬至9月上旬）、晚熟（10月中下旬至11月上旬）品种，中熟（9月中旬至10月上旬）品种较少，导致果实采收期过于集中、果品供应期偏短，这严重制约中华猕猴桃种质资源的高效开发[1-3]。同时中华猕猴桃多以伞房花序为主，需要进行人工疏花、疏果以促进果实的正常生长发育，极大地增加了劳动成本。因此，中熟、单花结果是中华猕猴桃品种选育的重要目标性状。江西省具有丰富的野生猕猴桃种质资源，从中选育的金丰、魁蜜等品种已成为国内外猕猴桃的主要骨干亲本，这均为选育一个极具特色的早中熟中华猕猴桃品种奠定了良好基础。

1　选育过程

江西农业大学猕猴桃科研团队从2008年开始对江西省野生猕猴桃种质资源进行搜集和保存，其中在江西省抚州市宜黄县海拔548 m处发现了编号为YH-2的单株，该单株结果时为单花结果类型，且成熟期较早。从母树采集接穗，进行异位高接（砧木为美味猕猴桃米良1号）。2010年，在江西省奉新县山维猕猴桃科技开发有限公司资源圃进行了为期3 a（年）的性状观测，包括倍性、遗传稳定性、植物学特征、果实品质等。2014—2017年，采集其接穗在赣南、赣中均进行高接换种，以中华猕猴桃金艳[4]为对照，进行品种比较试验。多年的品种比较试验结果表明，该优株倍性、单花结果特性等植物学特征稳定遗传，果实均匀一致，成熟期在9月中下旬（奉新地区）。2019年，该优株被定名为赣金2号，并于2023年9月获得农业农村部植物新品种权（编号：CNA20201000528）。

2　主要特征特性

2.1　倍性鉴定

采集金果（二倍体）、金艳（四倍体）、金魁（六倍体）以及赣金2号的嫩叶进行倍性检测。测定结果表明，赣金2号与金艳一样均为稳定的四倍体植株（图1）。

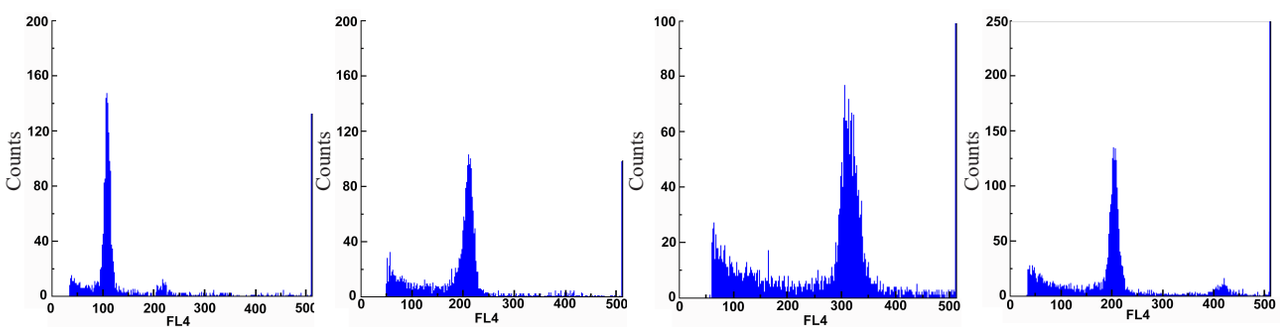

图1　倍性检测结果

Fig. 1　The result of ploidy tested

2.2 植物学特征

新梢表面有短茸毛；1年生枝呈黄褐色，平均节间长4.41 cm，直径0.95 cm，皮孔多呈长梭形，数量较多，黄色；结果母枝褐色，平均节间长2.36 cm，直径0.81 cm。幼叶和叶柄正面均有花青素着色，幼叶尖端渐尖，基部相接；成叶广卵圆形，叶尖平或微凹，叶长9.86 cm，叶宽12.19 cm，叶柄长6.11 cm，正面深绿色无茸毛，叶脉明显；花单生或伞房花序，每花序1~3朵花，花瓣为白色，5~7片（表1）。

2.3 果实经济性状

果实广椭圆形（图2），单花结果率超过95%；果实纵径4.30 cm，横径4.25 cm，果形指数1.01；果喙微顿凸，果柄长4.30 cm；平均单果质量93.60 g，最大单果质量127.80 g；果皮褐色，均匀覆有中等偏少的黄色短茸毛，萼片有宿存；果肉黄绿色，髓射线明显，肉质细腻，味甜，有香气，风味浓郁，品质上等；果实可溶性固形物含量（*w*，后同）为19.20%，干物质含量为18.77%，可滴定酸含量为0.98%，抗坏血酸含量为1.88 mg·g^{-1}（表2），果实耐贮藏，常温下可贮藏30~45 d。

表1 赣金2号和金艳的植物学性状特性比较

Table 1 Comparison of fruit characteristics of Ganjin 2 and Jinyan

品种 Cultivar	物候期 Phenological periods			叶 Leaf			花 Flower		
	伤流期 Branches bleeding	盛花期 Time of full bloom	果实成熟期 Fruit maturing	叶片形状 Shape	成叶长 Length/cm	成叶宽 Width/cm	花序类型 Inflorescence type	颜色 Colour of petals	朵/花序 Flower/ inflorescence
赣金2号 Ganjin 2	02-25—02-26	04-17—04-20	09-21—09-24	广卵圆形 Super broad ovate	9.86±0.34	12.19±0.38	单生或伞房花序 Single or corymb	白色 White	1-3
金艳 Jinyan	02-24—02-26	04-24—04-29	10-28—11-02	广卵圆形 Super broad ovate	13.89±0.45	14.02±0.22	伞房花序 Corymb	白色 White	3

品种 Cultivar	1年生枝 Annual branch			果实 Fruit					
	粗度 Thickness/ cm	节间长度 Internode length/cm	正面颜色 Front color	果实形状 Shape	果喙端形状 Fruit bottom	平均单果质量 Average mass/g	果形指数 Fruit shape index	中果皮颜色 Color of the pericarp	果柄长 Stalk length/ cm
赣金2号 Ganjin 2	0.95±0.05	4.41±0.32	褐色 Brown	广椭圆形 Broad oval	微顿凸 Convex	93.60±3.56	1.01±0.15	黄绿色 Green yellow	4.30±0.41
金艳 Jinyan	0.92±0.08	3.86±0.24	褐色 Brown	长圆柱形 Long cylinder	浅凹 Hollow	105.62±2.84	1.20±0.21	黄色 Gold	2.87±0.32

2.4 生长结果习性与物候期

坐果率超过95%，落花落果少。在江西省奉新地区，盛花期在4月中旬，花期为5~8 d，奉雄2号可以作为配套的授粉雄株；果实发育期155~160 d，果实成熟期在9月中下旬，为早中熟猕猴桃品种。连续结果能力强，结果枝率高（91.5%），正常生长的营

图2 中华猕猴桃新品种赣金2号

Fig. 2 A new *A. chinensis* cultivar Ganjin 2

表2 赣金2号和金艳的果实特性比较

Table 2 Comparison of fruit characteristics of Ganjin 2 and Jinyan

品种 Cultivar	*w*（抗坏血酸） Ascorbic acid content/（mg·g^{-1}）	*w*（可溶性固形物） Soluble solids content/%	*w*（干物质） Dry matter content/%	*w*（总酸） Total acids content/%
赣金2号 Ganjin 2	1.88±0.21	19.20±0.51	18.77±0.41	0.98±0.05
金艳 Jinyan	0.63±0.12	15.38±0.32	13.86±0.22	1.19±0.04

养枝均可成为翌年的结果母枝（表1）。盛果期产量为28.50 t·hm^{-2}。

2.5　DNA指纹图谱鉴定

利用4对SSR分子标记，对赣金2号与已报道的中华猕猴桃品种金艳、金果及庐山香等进行鉴定，并构建分子身份证。结果表明，赣金2号与已报道的中华猕猴桃品种在DNA水平上存在显著差异（表3）。

3　栽培技术要点

适宜在江西、湖南、浙江及纬度相似的省份种植，无霜期要求在150 d以上，≥10 ℃的积温在1800 ℃以上。宜采用架式为水平大棚架，株行距（3.0~3.5）m×（4~5）m，树形为单干双主蔓多侧蔓式。进入盛果期的果园需要每年施2~3次肥，春施N肥和复合肥分别用于壮芽、壮果，秋施基肥以有机肥为主。花期需要及时疏除弱花、晚花；由于其侧花坐果后会自动凋落，侧花可以不疏；奉雄2号可以作为配套的授粉雄株；坐果后及时疏除小果、畸形果、病虫果。当果实可溶性固形物含量达7.5%时（9月中下旬）及时采收，去除地热后放入冷库贮藏。冬剪时，芽饱满且枝条粗壮的结果母蔓留7~8个有效芽，枝条稍微纤弱的结果母蔓则留5~6个有效芽，太弱的结果母蔓直接疏除。

表3　基于SSR分子标记的分子身份证

Table 3　Molecular ID cards based on SSR molecular markers

品种（系）Cultivars	UDK96-035	FOR-13	EST-Ad42	UDK96-040
赣金2号 Ganjin 2	1100010	100111111	0000111100	0000000010101010
金艳 Jinyan	1001010	111001100	0000101000	0000011111011010
金果 Jinguo	0000001	000000000	0000100000	0000000011101010
庐山香 Lushanxiang	0000000	000000100	0000101000	0000010111101100
武植3号 Wuzhi 3	1010010	011000100	1000111100	0000011000111000
早鲜 Zaoxian	1001010	010010101	0011111001	0110000001100101
魁蜜 Kuimi	0000000	000000000	0000111000	0000000000000000
翠玉 Cuiyu	0010000	110001100	1001110100	1000011111110000
华优 Huayou	1001110	110001100	0011110011	0000011111000000
金桃 Jintao	1000010	001100101	0000010100	0000001100001000

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