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中国和UPOV、日本葡萄品种DUS测试指南比较分析

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摘 要：葡萄新品种已成为推动产业发展的重要因素。开展植物特异性（Distinctness）、一致性（Uniformity）和稳定性（Stability）（简称DUS）测试是新品种保护的技术基础和品种能否授权的科学依据，DUS测试指南是指导测试单位开展DUS测试工作的技术标准，也是审批机关开展新品种实质性审查的技术规范。通过对中国、国际植物新品种保护联盟（International Union For The Protection Of New Varieties Of Plants，简称UPOV）和日本的葡萄品种DUS测试指南在繁殖材料、测试方法、DUS判定标准、测试性状等方面的差异进行了分析，为进一步完善我国葡萄品种DUS测试指南提供参考。比较分析结果表明，三者在提交繁殖材料的质量和形式要求、测试周期、测试地点、附加测试、带星号性状等方面基本一致，在提交繁殖材料的数量要求、DUS判定标准、测试性状、基本性状、分组性状、选测性状、技术问卷性状等方面的要求不尽相同。

关键词：葡萄；UPOV；日本；DUS；测试指南

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Comparative analysis of test guidelines for distinctness, uniformity and stability of grapevine (*Vitis* L.) formulated by China, UPOV and Japan

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Abstract: New varieties are an important factor in promoting the development of the fruit industry. Application of plant distinctness, uniformity and stability (DUS) test is the technical basis for new variety protection and for variety certification. DUS test guidelines are the technical standards to guide the testing units to carry out DUS testing work, and also the technical specifications for the examination and approval authorities to carry out the substantive examination of new varieties. This paper analyzes the differences in propagation materials, test methods, assessment of distinctness, uniformity and stability, test traits and other aspects among the DUS test guidelines released by China, UPOV (International Union for the Protection of New Varieties of Plants) and Japan for grape varieties, and provides a reference for improving our country's DUS test guidelines for grape varieties. UPOV published the Grape DUS Test Guidelines TG/50/9 in 2008. The DUS test guidelines for grape varieties in Japan were coded as 1654. In 2014, China released the grape DUS test guidelines, NY/T 2563. The quality requirements for propagating material specified in the three guidelines are basically the same: strong stems, with full vitality, full buds, and no pests and diseases. In view of the many ways of grape propagation, which include sexual reproduction and asexual reproduction such as cuttings, grafting, and layering, the three guidelines require submission of propagation materials in the form of self-roots seedlings, grafted seedlings or cuttings. In addition, the three guidelines have different requirements for the number of submis-

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sions. For TG/50/9, the minimum number of materials required to be submitted is 5. In the case that the root of a variety is sensitive to phylloxera, it is allowed that scions of the cultivar can be grafted onto a specific rootstock variety that is not sensitive to the pest, and that the submission of propagation material is sufficient to produce 10 grafted seedlings or 10 self-rooting seedlings. 1654 requires 7 seedlings submitted. NY/T 2563 requires no less than 10 self-roots seedlings submitted or at least 50 buds when cuttings are submitted. The three test guidelines have the same requirements for test cycles, and each requires results of at least two independent growth cycles. Traits are the basis for DUS test review to accurately identify, distinguish, and characterize plant characteristics or traits that can be heritably expressed. Tested traits are divided into 5 categories according to function and requirements, including traits under standard test guidelines, asterisked (*) traits, grouping traits, additional traits and technical questionnaire characteristics. TG/50/9 has 44 tested traits, including 2 qualitative traits, 35 quantitative traits, and 7 pseudo-qualitative traits. NY/T 2563 has 51 tested traits, including 3 qualitative traits, 33 quantitative traits, and 15 pseudo-qualitative traits. 1654 has 52 tested traits, including 2 qualitative traits, 40 quantitative traits, and 10 pseudo-qualitative traits. Through the comparison of the tested traits, it can be found that there are 22 common traits in TG/50/9, NY/T 2563 and 1654 test traits, 10 with different grades, 3 with different expression states, 5 with different characteristic types, 1 with different observation sites, 2 with different grades and characteristic types, and 1 characteristic with different expression states and characteristic types. There are 44 basic traits in TG/50/9, 28 in NY/T 2563, and 52 in 1654. There are 28 TG/50/, NY/T 2563 and 1654 asterisked characteristics. TG/50/9 has 11 grouping traits, NY/T 2563 has 7, and 1654 has 11. The traits of the three test guidelines are comprehensively analyzed, and the test traits can be summarized into 6 categories: bud traits, branch traits, leaf traits, flower traits, fruit traits, and seed traits, of which leaf and fruit traits are the majority, accounting for 32.69%–39.22% and 29.55%–34.62% of all test characteristics, respectively. Through analysis and comparison, it is found that the three are basically the same in terms of the quality and form requirements, test cycle, test locations, additional tests, asterisked traits and other aspects of the submission of propagating materials, while the requirements for the number of reproducing materials submitted, DUS determination standards, test traits, basic traits, grouping traits, selective test traits, technical questionnaire traits, etc. are not the same. With the country's increasing emphasis on plant intellectual property protection and stable support for breeding of new varieties, the number of varieties bred in China is increasing, and more than 30 grape varieties are reported and registered every year. It is very important to speed up the revision of the grape variety test guidelines. Therefore, the authors put forward 11 revision suggestions in order to provide a strong guarantee for the breeding and protection of grape varieties in China, in line with the international grape DUS test guidelines while combining field practice.

Key words: Grapevine (*Vitis* L); UPOV; Japan; DUS; Test guidelines

葡萄为葡萄科（Vitaceae）葡萄属（*Vitis* L.）多年生藤本植物，具有适应性强、用途广、产业链长等特点，是世界性重要的经济果树之一[1]。葡萄也是我国的重要果树树种，面积和产量均居世界前列，在我国农村经济结构调整、美丽乡村建设和农民脱贫致富过程中均发挥着重要作用。回顾我国葡萄产业的发展历程，每次的快速发展都离不开新品种的选育和引进[2]。葡萄是世界上品种类型最多的树种之一，据国际葡萄品种名录VIVC（Vitis International Variety Catalogue）统计，截止到2021年全世界至少有23 000个品种（http://www.vivc.de/）[3]。同时葡萄品种间同物异名或同名异物以及苗木市场滥用品种名称等不良现象时有发生，极大地损害了育种者的权益，不利于产业的健康可持续发展[4]。建立完善的植物新品种保护制度可以提高对育种人新品种权的保护能力、调动育种者育种积极性、避免侵权行

为的发生，维持良好的种苗交易市场，以促进产业经济的稳步发展[5]。

我国于1999年正式加入UPOV，成为其第39个成员国，经过20余年的发展，我国植物新品种保护工作取得显著成绩。2022年新种子法开始实施，进一步加大了植物新品种知识产权的保护力度。开展植物特异性（Distinctness）、一致性（Uniformity）和稳定性（Stability）（简称DUS）测试是新品种保护的技术基础和品种能否授权的科学依据，DUS测试指南是指导测试单位开展DUS测试工作的技术标准，也是审批机关开展新品种实质性审查的技术规范[6]。我国于2014年发布了葡萄DUS测试指南，极大地推进和规范了我国葡萄新品种的申请与保护工作。随着近年来测试品种的不断增多，笔者在实践工作中发现一些需要调整和完善的内容，通过对UPOV、日本和我国的葡萄品种DUS测试指南进行比较分析，结合田间实践，总结三者的异同和优缺点，为我国葡萄品种DUS测试指南的修订提供参考思路，提高我国葡萄品种保护效率，加快我国葡萄新品种走出去的国际进程。

1　葡萄品种DUS测试指南概况

UPOV于2008年发布了葡萄DUS测试指南，版本号为TG/50/9[7]。日本葡萄品种DUS测试指南代号为1654。我国于2014年以行业标准的形式发布了《植物新品种特异性、一致性和稳定性测试指南葡萄（NY/T 2563—2014）》，以下简称NY/T 2563[8]。3个指南均适用于所有葡萄属（*Vitis* L.）新品种特异性、一致性和稳定性测试的结果判定。

2　葡萄品种DUS测试指南的比较分析

2.1　测试材料

3个指南提交的繁殖材料质量要求基本一致：枝条健壮、芽眼饱满、无病虫侵害，繁殖材料形式为自根苗、嫁接苗或插条[9]。但是三者对提交材料的数量要求不同，其中，TG/50/9要求提交材料的最少数量为5株，或足够产生5株植株的苗木或者插条，1654要求提交的种苗数量为7株，NY/T 2563要求提交的自根苗数量不少于10株或插条不少于50个芽。

2.2　测试方法

葡萄品种测试指南测试方法主要对测试周期、测试地点、试验设计等做了具体说明。

3个测试指南对测试周期的要求与苹果、桃等多数果树一致，均要求至少为2个独立的生长结果周期[10-11]，以减少测试过程中的误差，保证测试结果的可靠性。对测试地点进行了明确的规定，测试通常在同一个地点进行，如果某些性状在该地点不能充分表达，可在其他符合条件的地点对其进行观测。

2.3　三性判定标准

对于特异性的判定，3个指南基本一致，申请品种应明显区别于所有已知品种。在测试中，当申请品种至少在一个性状上与近似品种具有明显且可重现的差异时，即可判定申请品种具备特异性。

对于一致性的判定，TG/50/9、1654和NY/T 2563均采用1%的群体标准和至少95%的接受概率，但所取样本大小不同。TG/50/9、1654样本大小为5株，不允许有异型株；NY/T 2563样本大小为10株，最多允许有1个异型株。

对于稳定性的判定，TG/50/9和NY/T 2563在“一般不对稳定性进行测试，如果一个品种具备一致性，则可认为该品种具有稳定性”方面的论述是相同的。此外，TG/50/9还作了另外的要求：在适当的情况下，或在有疑问的情况下，可以通过再测试1个周期或者在新的地点测试，以确保其显示出与最初提供材料具有相同的特性。

2.4　测试性状

性状是DUS测试审查的基础，是指能够准确识别、区分和描述可遗传表达的植物特征或特性[6]。

2.4.1　*性状的功能分类及数量*　测试性状按照功能和要求分为5类，包括基本性状、带星号（*）性状、分组性状、选测性状和技术问卷性状。性状表中列出的TG/50/9测试性状有44个，NY/T 2563测试性状有51个，1654测试性状有52个（表1）。

基本性状是指DUS测试中UPOV接受的性状以及UPOV成员能够从中选择适合于特定环境的性状[12]。TG/50/9基本性状有44个，NY/T 2563基本性状有28个，1654基本性状有52个（表1）。带星号（*）性状是UPOV用于统一品种描述所需要的重要性状，除非受环境条件限制性状的表达状态无法测试，否则所有UPOV成员都应使用这些性状[12]。TG/50/9、NY/T 2563以及1654的带星号性状均有28个，分别占基本性状的63.64%、100%和53.85%。

分组性状可作为选择近似品种的依据，在特异

表1 葡萄品种DUS测试指南性状的功能分类及数量

Table 1 Functional classification and number of traits in different DUS test guidelines for *Vitis* L.

测试指南 Test guidelines	测试性状 Test traits	基本性状 Basic traits	带星号性状 Asterisked traits	分组性状 Grouping traits	选测性状 Selective traits	技术问卷性状 Technical questionnaire traits
TG/50/9	44	44	28	11	–	11
NY/T 2563	51	28	28	7	23	11
1654	52	52	28	11	–	–

注："–"表示在测试指南中此类性状未体现和说明。

Note："–" indicates that such characters are not reflected and explained in the test guidelines.

性测试中将那些不相关的已知品种排除在种植试验之外，同时用于种植试验分组，以便将近似品种种在一起[13]。适于分组的性状应为不变异或变异极小，而且这些性状的差异明显，在全部收集的品种中应该均匀分布。其中TG/50/9有11个分组性状，NY/T 2563有7个分组性状，1654有11个分组性状（表1），详细对比见表2。对于选测性状，TG/50/9与1654并无相关说明，在NY/T 2563中，除了带星号性状，其余皆为选测性状，共23个。

技术问卷性状是在DUS测试指南技术问卷中列出的性状，旨在通过育种人提供的性状信息了解品种基本情况、初步筛选近似品种[6]。1654中没有体现出技术问卷性状，而TG/50/9和NY/T 2563的11个技术问卷性状一致，为"嫩梢：梢尖开合程度、幼叶：正面颜色、幼叶：背面主脉间匍匐茸毛密度、花序：花器类型、成龄叶：裂片数、浆果始熟期、果粒：形状、果粒：颜色、果粒：果肉花青甙显色强度、果粒：香型、果粒：种子"。

2.4.2 性状的内容分类及数量 对3个测试指南的性状进行综合分析，可将测试性状归纳为芽性状、枝

表2 葡萄品种DUS测试指南分组性状对比

Table 2 Grouping characteristics in different DUS test guidelines for *Vitis* L.

序号 Serial number	TG/50/9 性状编号/性状名称 Number/Characteristics	NY/T 2563 性状编号/性状名称 Number/Characteristics	1654 性状编号/性状名称 Number/Characteristics	类型 Type
1	2*嫩梢：梢尖开合程度 Young shoot：openness of tip	–	2*嫩梢：梢尖开合程度 Young shoot: openness of tip	QN
2	6*幼叶：正面颜色 Young leaf：color of upper side	–	6*幼叶：正面颜色 Young leaf：color of upper side	PQ
3	7*幼叶：背面主脉间匍匐茸毛密度 Young leaf: prostrate hairs between main veins on lower side	–	7*幼叶：背面主脉间匍匐茸毛密度 Young leaf：prostrate hairs between main veins on lower side	QN
4	16*花序：花器类型 Flower：floral organs	–	17*花序：花器类型 Flower: Floral organs	QL
5	20*成龄叶：裂片数 Mature leaf: number of lobes	11*成龄叶：裂片数 Mature leaf：number of lobes	21*成龄叶：裂片数 Mature leaf：number of lobes	QN/QN/PQ
6	31*浆果始熟期 Time of verasion	19*浆果始熟期 Time of beginning of berry ripening	32*浆果始熟期 Time of verasion	QN
7	36*果粒：形状 Berry: shape	24*果粒：形状 Berry: shape	38*果粒：形状 Berry: shape	PQ
8	37*果粒：颜色 Berry：color of skin	25*果粒：颜色 Berry：color of skin	39*果粒：颜色 Berry：color of skin	PQ
9	40*果粒：果肉花青甙显色强度 Berry：anthocyanin coloration of flesh	–	44*果粒：果肉花青甙显色强度 Berry：anthocyanin coloration of flesh	QN
10	42*果粒：香型 Berry: particular flavor	27*果粒：香型 Berry：particular flavor	49*果粒：香型 Berry：particular flavor	PQ
11	43*果粒：种子的形成 Berry: formation of seeds	28*果粒：种子 Berry：formation of seeds	50*果粒：种子的形成 Berry：formation of seeds	QL
12	–	30幼叶：背面主脉上直立茸毛密度 Young leaf：erect hairs on main veins on lower side of blade	–	QN

注：QL. 质量性状；QN. 数量性状；PQ. 假质量性状；–表示对应的性状在该指南中不作为分组性状。下同。

Note：QL. Qualitative traits; QN. Quantitative traits; PQ. Pseudo-qualitative traits; –. The corresponding trait is not used as a grouping trait in this guideline. The same below.

条性状、叶性状、花性状、果实性状、种子性状6类（表3）。表3表明，这3个指南的测试性状以叶性状和果实性状居多，叶性状占所有测试性状的32.69%~39.22%，果实性状占所有测试性状的29.55%~34.62%。

表3　葡萄品种DUS测试指南性状的内容分类及数量

Table 3　Content classification and number of traits in different DUS test guidelines for *Vitis* L.

性状分类 Classification of traits	TG/50/9	NY/T 2563	1654
芽性状 Bud traits	1	1	1
枝条性状 Shoot traits	12	12	12
叶性状 Leaf traits	16	20	17
花性状 Flower traits	1	1	3
果实性状 Fruit traits	13	16	18
种子性状 Seed traits	1	1	1

2.4.3　*测试性状差异分析*　TG/50/9有44个测试性状，其中质量性状2个、数量性状35个、假质量性状7个。NY/T 2563有51个测试性状，其中质量性状3个、数量性状33个、假质量性状15个。1654有52个测试性状，其中质量性状2个、数量性状40个、假质量性状10个（表4）。从表4可以看出，TG/50/9、NY/T 2563与1654测试性状完全相同的性状有21个，分级数不同的性状有10个，表达状态不同的性状有2个，性状类型不同的性状有5个，观测部位不同的性状有1个，分级数及性状类型不同的性状有2个，表达状态及性状类型不同的性状有1个，表达状态和代码对应不一致的性状有2个。

除此之外，TG/50/9、1654和NY/T 2563在萌芽始期、始花期、浆果始熟期的观测时期以及在新梢性状和成龄叶性状上的观测部位不同。TG/50/9和1654萌芽始期的观测时期为“当50%的植株处于芽萌发阶段”，NY/T 2563为“当约5%的芽眼萌发时为萌芽开始期”。TG/50/9和1654始花期的观测时期为“10%花帽脱落”，NY/T 2563为“5%花帽脱落”。TG/50/9和1654浆果始熟期的观测时期为“当50%的植株上约50%的浆果开始变软，用手指轻轻按压会变形”，NY/T 2563为“当有色品种果粒开始显浅色，黄色、绿色品种开始变软为果粒始熟期，5%的果粒始熟”。TG/50/9新梢的观测部位为“在嫩枝的三分之一处”，1654和NY/T 2563为“在树体中部的枝条上”。TG/50/9和1654成龄叶的观测部位为“在花序正上方枝条中间三分之一的叶片上”，NY/T 2563为“在新梢的第7~9枚叶片上”。

3　讨论与分析

国际植物新品种保护联盟，简称UPOV（International Union For The Protection Of New Varieties Of Plants），它是一个政府间的国际组织，主要协调和促进成员国之间在行政和技术上的合作[14]。UPOV是由《保护植物新品种国际公约》建立的，该公约于1961年在巴黎通过，并进行了3次修订呈现3个版本，分别为1972年文本、1978年文本和1991年文本[15]。我国于1999年4月23日正式加入UPOV，执行1978年文本，从此开始实施植物新品种保护制度，并不断研制和修订相应的DUS测试指南，以促进我国植物新品种保护事业的快速发展。

品种登记、品种权申请等工作的关键环节是进行DUS测试，而开展DUS测试的重要依据是DUS测试指南，因此，研制科学合理的DUS测试指南具有重要意义[16-17]。迄今为止，UPOV已发布337份DUS测试指南（https://www.upov.int/test_guidelines/en/），在指导和统一各成员国DUS测试和品种描述等方面发挥了重要作用[18]。同时，UPOV鼓励各个成员国承担标准的修订工作，以更好地满足产业和育种人的需求。随着国家对植物知识产权保护的日益重视和对新品种选育工作的稳定支持，国内育成品种日益增多，每年报道审定登记葡萄品种30余个，新的性状类型不断出现，建议加快推进葡萄品种测试指南的修订，结合田间实践的同时也要与国际葡萄DUS测试指南接轨，制定出更加完善且适于我国的葡萄品种DUS测试指南，为我国葡萄品种的选育和保护提供有力的保障。

通过上述比较分析，表明了3个指南在提交繁殖材料的质量要求、测试周期、附加测试、带星号性状上是一致的，但由于三者在一些方面的要求不一致或者在中国、UPOV和日本葡萄DUS测试指南中的某1个或某2个指南中并未对某方面的要求进行陈述，所以三者在提交繁殖材料的质量和形式要求、测试周期、测试地点、附加测试、带星号性状等方面基本一致，在提交繁殖材料的数量要求、DUS判定标准、测试性状、基本性状、分组性状、选测性状、技术问卷性状等方面的要求不尽相同。笔者通过系统比对、分析TG/50/9、NY/T 2563与1654的异同，并结合实际对葡萄品种DUS测试提出以下修订建议（表5）。

表 4 葡萄品种 DUS 测试指南测试性状对比

Table 4 Tested in different DUS test guidelines for *Vitis* L.

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
1	1*萌芽始期 Time of bud burst	1*	1*	XT	–
2	2*嫩梢：梢尖开合程度 Young shoot: openness of tip	2*	2*	XT	–
3	3*嫩梢：梢尖匍匐茸毛密度 Young shoot: density of prostrate hairs on tip	3*	3*	XT	–
4	4*嫩梢：梢尖匍匐茸毛花青甙显色强度 Young shoot: anthocyanin coloration of prostrate hairs on tip	4*	4*	XT	–
5	5 嫩梢：梢尖直立茸毛密度 Young shoot: density of erect hairs in shoot tip	29	5	FJ	TG/50/9 和 1654 此性状分为 9 级，NY/T 2563 此性状分为 5 级。 In TG/50/9 and 1654, this trait is divided into 9 levels, and in NY/T 2563 it is divided into 5 levels.
6	6*幼叶：正面颜色 Young leaf: color of the upper side	5*	6*	XT	–
7	7*幼叶：背面主脉间匍匐茸毛密度 Young leaf: prostrate hairs between main veins on lower side of blade	6*	7*	XT	–
8	8 幼叶：背面主脉上直立茸毛密度 Young leaf: erect hairs on main veins on lower side	30	8	FJ	TG/50/9 和 1654 此性状分为 9 级，NY/T 2563 此性状分为 5 级。 In TG/50/9 and 1654, this trait is divided into 9 levels, and in NY/T 2563, it is divided into 5 levels.
9	9 新梢：姿态（引绑前） Shoot: form (before tying)	31	9	FJ XZ	TG/50/9 和 1654 此性状为数量性状，分为 9 级；NY/T 2563 此性状为假质量性状，分为 5 级。 In TG/50/9 and 1654, this trait is a quantitative trait and divided into 9 levels; In NY/T 2563, this trait is a pseudo-qualitative trait and divided into 5 levels.
10	10 新梢：节间背侧颜色 Shoot: color of dorsal side of internodes	32	10	XZ	TG/50/9 和 1654 此性状为数量性状，NY/T 2563 此性状为假质量性状。 TG/50/9 and 1654 define this trait as a quantitative trait, while NY/T 2563 defines it as a pseudo-qualitative trait.
11	11*新梢：节间腹侧颜色 Shoot: color of ventral side of internodes	7*	11*	XZ	TG/50/9 和 1654 此性状为数量性状，NY/T 2563 此性状为假质量性状。 TG/50/9 and 1654 define this trait as a quantitative trait, while NY/T 2563 defines it as a pseudo-qualitative trait.
12	12 新梢：节背侧颜色 Shoot: color of dorsal side of nodes	34	12	XZ	TG/50/9 和 1654 此性状为数量性状，NY/T 2563 此性状为假质量性状。 TG/50/9 and 1654 define this trait as a quantitative trait, while NY/T 2563 defines it as a pseudo-qualitative trait.

表 4（续）　Table 4　(Continued)

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
13	13 新梢：节腹侧颜色 Shoot：color of ventral side of nodes	33	13	XZ	TG/50/9 和 1654 此性状为数量性状，NY/T 2563 此性状为假质量性状。 TG/50/9 and 1654 define this trait as a quantitative trait, while NY/T 2563 defines it as a pseudo-qualitative trait.
14	14 新梢：节间直立茸毛密度 Shoot：erect hairs on internodes	35	14	FJ	TG/50/9 和 1654 此性状为数量性状，分为 9 级；NY/T 2563 此性状为假质量性状，分为 5 级。 In TG/50/9 and 1654, this trait is a quantitative trait and divided into 9 levels; in NY/T 2563 it is a pseudo-qualitative trait and divided into 5 levels.
15	15 新梢：卷须长度 Shoot：length of tendrils	36	15	XT	–
16	16*花序：花器类型 Flower：sexual organs	8*	17*	FJ	TG/50/9 和 1654 此性状分为 4 级，表达状态为雄花/雄花和弱化的雌花/两性花/雌花；NY/T 2563 此性状分为 3 级，表达状态为雄花/雌能花/两性花。 In TG/50/9 and 1654, this trait is divided into 4 levels, including fully developed male flower, male flower with weak development of female organs, bisexual flower and female flower; In NY/T 2563, this trait is divided into 3 levels, male flower/female flower/hermaphroditic flower.
17	17*成龄叶：大小 Mature leaf: size of blade	9*	18*	XT	–
18	18*成龄叶：形状 Mature leaf：shape of blade	10*	19*	BD	TG/50/9 和 1654 此性状表达状态为心形/楔形/近五角形/近圆形/肾形；NY/T 2563 此性状表达状态为心形/近三角形/近五角形/近圆形/肾形。 TG/50/9 and 1654 describe this trait as cordate, wedge-shaped, pentagonal, circular, or kidney-shaped; NY/T 2563 describes it as cordate, triangular, pentagonal, circular, or kidney-shaped.
19	19 成龄叶：泡状突起 Mature leaf：blistering of upper side of blade	39	20	XT	–
20	20*成龄叶：裂片数 Mature leaf：number of lobes	11*	21*	BD XZ	TG/50/9 此性状为数量性状，表达状态为一裂/三裂/五裂/七裂/多于七裂；NY/T 2563 此性状为数量性状，表达状态为无/三裂/五裂/七裂/多于七裂；1654 此性状为假质量性状，表达状态为一裂/三裂/五裂/七裂/多于七裂。 In TG/50/9, this trait is a quantitative trait and described as one, three, five, seven, and more than seven lobes; In NY/T 2563, it is also a quantitative trait including none, three, five, seven and more than seven lobes; in 1654, this trait is a pseudo- qualitative trait, including one, three, five, seven and more than seven lobes.
21	21 成龄叶：上裂刻深度 Mature leaf：depth of upper lateral sinuses	40	22	XT	–
22	22 成龄叶：上裂刻裂片开叠类型 Only varieties with lobed leaves: Mature leaf：arrangement of lobes of upper lateral sinuses	41	23	FJ	TG/50/9 和 1654 此性状分为 4 级，表达状态为开张/闭合/轻度重叠/高度重叠；NY/T 2563 此性状分为 3 级，表达状态为开张/闭合/重叠。 In TG/50/9 and 1654, this trait is divided into 4 levels, including open, closed, slightly overlapped and strongly overlapped; in NY/T 2563 it is divided into 3 levels, open, closed, and overlapped.

表 4（续） Table 4 (Continued)

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
23	23*成龄叶：叶柄洼开叠类型 Mature leaf: arrangement of lobes of petiole sinus	12*	24*	FJ XZ	TG/50/9 此性状为数量性状，分为 9 级，表达状态为极开张/高度开张/半开张/轻度开张/闭合/轻度重叠/中度重叠/高度重叠/极重叠；NY/T 2563 此性状为数量性状，分为 7 级，表达状态为极开张/开张/半开张/闭合/轻度重叠/中度重叠/高度重叠；1654 此性状为假质量性状，分为 9 级，表达状态为极开张/高度开张/半开张/轻度开张/闭合/轻度重叠/中度重叠/高度重叠/极重叠。 In TG/50/9, this trait is a quantitative trait and divided into 9 levels: very wide open, wide open, half open, slightly open, closed, slightly overlapped, half overlapped, strongly overlapped, and very strongly overlapped; in NY/T 2563 it is a quantitative trait divided into 7 levels: very wide open, wide open, half open, closed, slightly overlapped, half overlapped, and strongly overlapped; in 1654 it is a pseudo-qualitative trait and divided into 9 levels: very wide open, wide open, half open, slightly open, closed, slightly overlapped, half overlapped, strongly overlapped, and very strongly overlapped.
24	24*成龄叶：锯齿长度 Mature leaf: length of teeth	13*	25*	FJ	TG/50/9 和 1654 此性状分为 9 级，NY/T 2563 此性状分为 5 级。 In TG/50/9 and 1654, this trait is divided into 9 levels, and in NY/T 2563, it is divided into 5 levels.
25	25*成龄叶：锯齿长度/锯齿宽度之比 Mature leaf: ratio length/width of teeth	14*	26*	XT	–
26	26*成龄叶：锯齿形状 Mature leaf: shape of teeth	15*	27*	SC	–
27	27*成龄叶：正面主脉上花青甙显色强度 Mature leaf: proportion of main veins on upper side of blade with anthocyanin coloration	16*	28*	BW	TG/50/9 和 1654 此性状观测花青甙着色的主脉总长度的比例，花青甙显色的中断不包括在该比例中。NY/T 2563 此性状观测正面主脉上花青甙显色强度，观察叶片上表面的主要叶脉从基部到中部的花青甙显色强度。 In TG/50/9 and 1654, this trait is recorded according to the proportion of colored main vein portion against the total length of the main vein, and the interruption of anthocyanin coloration was not included in this proportion. In NY/T 2563, the trait is observed as the color intensity on the frontal main veins and the color intensity on the upper surface of the leaves observed from the base to the middle of the main vein.
28	28*成龄叶：背面主脉间匍匐茸毛密度 Mature leaf: prostrate hairs between main veins on lower side of blade	17*	29*	XT	–
29	29*成龄叶：背面主脉上直立茸毛密度 Mature leaf: erect hairs on main veins on lower side of blade	18*	30*	XT	–
30	30 成龄叶：叶柄长度/中脉长度之比 Mature leaf: length of petiole compared to length of middle vein	37	31	XT	–

表4（续）　Table 4 (Continued)

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
31	31*浆果始熟期 Time of beginning of berry ripening	19*	32*	XT	–
32	32*果穗：大小（花序梗除外） Bunch: size (peduncle excluded)	20*	33*	XT	–
33	33*果穗：密度 Bunch: density	21*	34*	XT	–
34	34*果穗：穗梗长度 Bunch：length of peduncle of primary bunch	22*	35*	XT	–
35	35*果粒：大小 Berry: size	23*	37*	XT	–
36	36*果粒：形状 Berry: shape	24*	38*	BD	TG/50/9 和 1654 此性状表达状态为扁圆形/圆形/宽椭圆形/长椭圆形/圆柱形/钝卵圆形/卵圆形/倒卵圆形/弯形/手指形；NY/T 2563 此性状表达状态为圆柱形/长椭圆形/椭圆形/圆形/扁圆形/卵圆形/钝卵圆形/倒卵圆形/弯形/束腰形。 TG/50/9 and 1654 describe this trait as obloid, globose, broad ellipsoid, narrow ellipsoid, cylindrical, obtuse ovoid, ovoid, obovoid, horn-shaped, or finger-shaped; NY/T 2563 as cylindrical, narrow ellipsoid, ellipsoid, globose, obolid, ovoid, obtuse ovoid, obovoid, horn-shaped and waist-shaped.
37	37*果粒：果皮颜色（未开花） Berry：color of skin (without bloom)	25*	39*	FJ	TG/50/9 和 1654 此性状分为 9 级，表达状态为绿色/黄绿色/黄色/红黄色/淡红色/红色/灰红色/深紫红色/蓝黑色；NY/T 2563 此性状分为 8 级，表达状态为绿色/黄绿色/黄色/粉红色/红色/暗红色/紫黑色/蓝黑色。 TG/50/9 and 1654 divide this trait into 9 levels: green, yellow green, yellow, yellow rose, rose, red, grey red, dark red violet, and blue black; NY/T 2563 divides it into 8 levels: green, yellow green, yellow, pink, red, dark red, purple-black or blue-black.
38	38 果粒：果粒与果柄分离难易程度 Berry：ease of detachment from pedicel	47	41	SC	–
39	39 果粒：果皮厚度 Berry：thickness of skin	48	42	FJ	TG/50/9 和 NY/T 2563 此性状分为 3 级，1654 此性状分为 9 级。 TG/50/9 and NY/T 2563 this characteristic is divided into 9 levels, and 1654 this characteristic is divided into 5 levels.
40	40*果粒：果肉花青甙显色强度 Berry：anthocyanin coloration of flesh	26*	44*	XT	–
41	41 果粒：果肉硬度 Berry：firmness of flesh	49	45	XZ	TG/50/9 和 1654 此性状为数量性状，NY/T 2563 此性状为假质量性状。 In TG/50/9 and 1654, this trait is a quantitative trait; in NY/T 2563 it is a pseudo-qualitative trait.
42	42*果粒：香型 Berry：particular flavor	27*	49*	FJ	TG/50/9 和 1654 此性状分为 5 级，表达状态为无/玫瑰香型/狐香型/青草型/其他；NY/T 2563 此性状分为 6 级，表达状态为无/玫瑰香型/草莓香型/狐香型/青草型/其他。 In TG/50/9 and 1654, this trait is divided into 5 levels: none, muscat, foxy, herbaceous and other odor than muscat, foxy or herbaceous; in NY/T 2563 it is divided into 6 levels: none, muscat, strawberry flavor, foxy, herbaceous and other odors.

表4（续） Table 4 (Continued)

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
43	43*果粒：种子的形成 Berry：formation of seeds	28*	50*	FJ	TG/50/9和1654此性状分为3级，表达状态为无/有败育痕迹/有；NY/T 2563此性状分为4级，表达状态为无/败育类型Ⅰ/败育类型Ⅱ/正常。 In TG/50/9 and 1654, this trait is divided into 3 levels: none, rudimentary and complete; in NY/T 2563 it is divided into 4 levels: none, fertile type Ⅰ, fertility type Ⅱ, and normal.
44	44成熟枝条：主要色泽 Woody shoot：main color	51	51	XT	–
45	–	38成龄叶：叶柄洼受叶脉限制类型 Mature leaf：petiole depressions are limited by the type of leaf veins	–	–	–
46	–	42成龄叶：下裂刻裂片开叠类型 Mature leaf：arrangement of lobes of lower lateral sinuses	–	–	–
47	–	43成龄叶：横截面形状 Mature leaf：cross-sectional shape	–	–	–
48	–	44果穗：形状 Bunch: shape	–	–	–
49	–	45果穗：歧肩 Bunch: shoulders	–	–	–
50	–	46果粒：质量 Berry：weight	–	–	–
51	–	50果粒：果皮涩味 Berry：the peel is astringent	–	–	–
52	–	–	16花序：花穗长度 Flower：length of flower clusters	–	–
53	–	–	36果穗：穗梗颜色 Bunch：color of peduncle	–	–
54	–	–	40果粒：果粉 Berry：bloom	–	–
55	–	–	43果粒：果肉与果皮分离难易程度 Berry：separation of skin and flesh	–	–
56	–	–	46果粒：果肉的特性 Berry：character of flesh	–	–
57	–	–	47果粒：果汁的甜度 Berry：Sweetness of flesh juice	–	–
58	–	–	48果粒：果汁的多少 Berry: juiciness of flesh	–	–

表4（续）　Table 4 (Continued)

序号 Serial number	TG/50/9 性状编号/性状名称 Number/traits	NY/T 2563 性状编号/性状名称 Number/traits	1654 性状编号/性状名称 Number/traits	性状差异 Differences in traits	差异说明 Difference in description
59	–	–	52 生态型：落花的多少 Ecotype：flower shatter	–	–

注：FJ. 分级数不同；XT. 无差异；BD. 表达状态不同；XZ. 性状类型不同；BW. 观测部位不同；SC. 表达状态和代码对应不同；TG/50/9、NY/T 2563 以及 1654 性状名称相同时将 NY/T 2563、1654 性状名称省略。

Note: FJ. different grades; XT. no difference; BD. different expression status; XZ. different trait type; BW. different observation site; SC. different expression status and code correspondence; TG/50/9, NY/T 2563 and 1654 Omit the names of NY/T 2563 and 1654 traits when the trait names are the same.

表5　NY/T 2563 修订建议

Table 5　NY/T 2563 revision suggestions

序号 Serial number	原文 Original	修改意见 Revise opinion	修改理由 Reason for revision
1	繁殖材料的要求：提交的自根苗数量不少于10株，或插条不少于50芽 Requirements for propagation material: the number of self-rooted seedlings submitted is not less than 10 plants, or the cuttings not less than 50 buds	建议提交的植物材料的最低数量为5株 The minimum amount of recommended plant material to be submitted is 5 plants	适当减少提交的材料数量不会给试验结果造成影响，材料过多造成工作量大增 Appropriately reducing the number of submitted materials will not affect the test results, and the excessive amount of materials will greatly increase the workload
2	一致性的判定：采用1%的群体标准和至少95%的接受概率，当样本大小为10株时，最多可以允许有1个异型株 Determination of uniformity: Using a population standard of 1% and a probability of at least 95% acceptance, when the sample size is 10 plants, a maximum of 1 heterotypic strain can be allowed	建议修改为：应采用1%的群体标准和至少95%的接受概率，在样本大小为5株时，不允许有异型株 It is recommended to amend to: a population standard of 1% and a probability of at least 95% acceptance should be used, and no deformed plants are allowed when the sample size is 5 strains	减小样本大小，减少工作量，提高测试效率 Reduce sample size, reduce workload, and improve test efficiency
3	性状8“花序：花器类型”表达状态为“雄花/雌能花/两性花” Characteristic8 “Flower: sexual organs” the expression state is male flower/female flower/hermaphroditic flower	建议将表达状态修改为“雄花/雄花和弱化的雌花/两性花/雌花” It is recommended to change the expression state to “male/male flowers and weakened female flowers/hermaphroditic flowers/female flowers”	花器类型中除了雄花、雌能花、两性花之外还有另外一种花器类型的存在，即雄花和弱化的雌花并存 In addition to male flowers, female flowers, and hermaphroditic flower , there is another type of sexual organs , that is, the coexistence of male flowers and weakened female flowers
4	性状11“成龄叶：裂片数”表达状态为“无/三裂/五裂/七裂/多于七裂” Characteristic11 “Mature leaf: number of lobes” the expression state is “none/three/five/seven/more than sevens”	建议将表达状态修改为“一裂/三裂/五裂/七裂/多于七裂” It is recommended to change the expression state to “one/three/five/seven/more than sevens”	无裂片即无裂刻的成龄叶，为在表述上与国际测试指南统一，建议将“无”改为“一裂” For mature leaves without splits, it is recommended to change “none” to “one split” in order to be consistent with the international test guidelines.
5	性状15“成龄叶：锯齿形状”分为5级，表达状态为“两侧凸/两侧直/两侧凹/一侧凸，一侧凹/两侧直与两侧凸混合型” Characteristic15 “Mature leaves: shape of teeth” is divided into 5 levels, and the expression status is “both sides convex/both sides straight/both sides concave/one side convex, one side concave/mixture of both sides straight and both sides convex”	建议增加1个表达状态“两侧直一侧凸一侧凹混合型” It is recommended to add 1 expression state “both sides straight, one side convex, one side concave mixed type”	成龄叶的锯齿形状中存在“两侧直一侧凸一侧凹混合型” There is a “ both sides straight, one side convex, one side concave mixed type ” in the sawtooth shape of mature leaves

表5（续） Table 5 (Continued)

序号 Serial number	原文 Original	修改意见 Revise opinion	修改理由 Reason for revision
6	性状20“果穗：大小” Characteristic20 “Bunch: size”	建议将该性状拆分为“果穗：长度”和“果穗：宽度“2个数量性状 It is recommended to split this characteristic into two quantitative characteristics: “Bunch: Length” and “Bunch: Width”	果穗大小是用投影面积表示的，果穗大小（cm²）=穗长（cm）（不包括穗梗）×穗宽（cm），用此方法计算的面积不够准确，并且在已知穗长和穗宽的情况下再计算出面积比较繁琐，原本的穗长和穗宽已经可以作为判定新品种的2个性状并且更加准确实用 Panicle size is expressed in terms of projected area, panicle size (cm²) = panicle length (cm) (excluding panicle stem) ×panicle width (cm), the area calculated by this method is not accurate enough, and it is more cumbersome to calculate the area under the condition of known panicle length and panicle width, the original panicle length and panicle width can already be used as two characteristics to determine the new variety and more accurate and practical
7	性状24“果粒：形状”分为10级，表达状态为“圆柱形/长椭圆形/椭圆形/圆形/扁圆形/卵圆形/钝卵圆形/倒卵圆形/弯形/束腰形” Characteristic 24 “Berry: shape” is divided into 10 levels, and the expression status is” cylindrical/ narrow ellipsoid/ ellipsoid/ globose/ obloid/ ovoid/ obtuse ovoid/ obovoid/horn-shaped/ waist-shaped”	建议将该性状增加一个表达状态“窄指形” It is recommended to add an expression state to the characteristic "narrow finger shape"	束腰形为较宽的手指形，增加一个窄指形更有利于品种的区分 The corset waist shape is a wider finger shape, and adding a narrow finger shape is more conducive to the differentiation of varieties
8	性状36“新梢：卷须长度” Characteristic 36 “Shoot: length of tendrils”	建议将该性状删除 It is recommended that the characteristic be removed	在实际应用中很少通过测量卷须的长度来判别品种，在测试指南中也未给出测量卷须具体部位和长度等级划分 In practical applications, it is rare to determine the variety by measuring the length of the tendrils, and the specific parts of the measuring tendrils and the length grade are not given in the test guideline
9	增加性状 Increases the characteristics	“果粒：酒窝凹陷的有无” “Berry: presence of a dimple”	有些品种的果粒在未受到挤压等外界条件的影响下先天性存在凹陷，如IFG Six等；无凹陷的品种如霞多丽 Some varieties of fruit have congenital dimples without being affected by external conditions such as extrusion, such as IFG Six, etc.; varieties without dimples such as Chardonnay
10	萌芽始期：当约5%的芽眼萌发时为萌芽开始期 Time of bud burst: The bud- onset phase occurs when about 5% of the buds germinate	建议修改为“当50%的植株处于芽萌发阶段为萌芽开始期” Suggested revision to “When 50% of the plants are in the bud germination stage for the germination stage”	通过观察开始萌芽植株的百分比更方便萌芽始期的判定，并且更具有普遍性 By observing the percentage of plants that begin to germinate, it is more convenient to determine the initial stage of germination and is more general
11	选测性状中数量性状的代码表示为“1/2/3/4/5” The code for the quantitative characteristics in the additional characteristics is expressed as “1/2/3/4/5”	建议将选测性状中数量性状的代码表示为“1/3/5/7/9” It is recommended that the code of the quantitative characteristic in the selected characteristic be expressed as “1/3/5/7/9”	在代码表示中，数量性状一般为“1/3/5/7/9”，同时也与国际DUS测试指南相统一 In the code representation, the quantitative characteristic is generally “1/3/5/7/9”, which is also consistent with the international DUS test guidelines

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