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ICS 65.020.20
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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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GB/T 19557.1-2026

Replacing GB/T 19557.1-2004

Guidelines for the tests of distinctness, uniformity and stability for plant varieties - General

植物品种特异性、一致性和稳定性测试指南 总则

Issued on: May 25, 2026 **Implemented on: December 1, 2026**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

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5.1 Selection of traits

5.1.1 Traits used for DUS testing and variety description must meet the following basic conditions for trait expression.

a) It is the result of the action of a specific genotype or combination of genotypes;

b) It exhibits sufficient consistency and repeatability under specific conditions;

c) The varieties exhibit sufficient differences to determine specificity;

d) It can be accurately defined and identified;

e) Meets consistency criteria;

f) Meets stability criteria.

Note. The inherent commercial value of traits is generally not considered as a trait for DUS testing, but certain economic traits, special traits, or novel traits may be excluded if they meet the above criteria. If the above conditions are met, they will be considered as DUS test traits.

5.1.2 The traits used for testing of substantial derivative varieties should meet the conditions in 5.1.1.

5.2 Expression status of traits The DUS testing guidelines divide the trait into a series of different expression states, each described by a numerical code. Correspondingly. To better

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define expression status, the DUS testing guidelines provide standard varieties or legends as a reference for determining trait expression status. Basis. When testing the same plant species in different ecological zones, standard varieties adapted to the specific ecological zone can be used.

5.3 Types of trait expression In the DUS test, traits are classified into three types. qualitative traits, quantitative traits, and pseudo-qualitative traits.

5.4 Observation of traits The DUS testing guidelines should clearly specify the observation period, observation site, observation method, and sample size to facilitate the assessment of sexuality. To accurately observe and compare the conditions. If mixed samples are required for trait observation, refer to the UPOV document on specificity testing (TGP/9) and the document on consistency testing. (TGP/10) provides detailed instructions.

5.5 Special Characteristics

5.5.1 Traits induced by external factors Traits expressed due to external factors must meet the conditions in 5.1.Such traits can be accurately defined, and appropriate testing methods can be selected. This method ensures consistency in testing.

5.5.2 Quality Characteristics The traits expressed under the influence of chemical components must meet the conditions in 5.1.Such traits can be accurately defined, and appropriate testing methods can be selected. This method ensures consistency in testing.

5.5.3 Composite traits Biologically significant composite traits can be directly used as DUS test traits and subjected to specificity and consistency tests in the same way as other traits. And stability testing. Sometimes, these combined traits can be tested using techniques such as image analysis. Combinatorial traits should not be confused with the application of statistical methods, such as "multivariate analysis".

5.6 New Types of Traits New types of traits, including molecular traits, can be used during testing.

5.7 Functional classification of traits The functional classification of traits is shown in Table 1.

6 Specificity determination

6.1 Variety Comparison In theory, when applying for variety specificity review, it is necessary to consider comparing the variety with all known varieties. In practice, the variety being applied for... By comparing with similar varieties, specificity can be determined. If the applied variety can be accurately distinguished by comparing information such as the known variety library (see 4.3), or if the applied variety is bred from a certain species. For the first variety, there is no need to conduct planting trials or indoor analysis. If a clear distinction cannot be made, it is advisable to determine the application through planting

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trials. Please refer to the UPOV section on specificity testing (TGP/9) for details on variety specificity. For varieties with a clear link between genes and traits, further testing can be conducted. Specificity should be determined by molecular detection, which should be performed according to the method in NY/T 2594. The technical questionnaire (Appendix A) specifically points out the important traits of the applied variety and the characteristics that are significantly different from one or more similar varieties. These similar varieties can be planted together with the applied variety and directly compared.

6.2 Principles for Determining Specificity If a variety shares more than one distinct trait with a known variety, then that variety is considered to have a significant difference. If a trait shows a difference only at the level of uniformity, without causing a change in the overall expression of that trait in the variety, this difference cannot be considered a valid trait. As a basis for determining specificity.

6.3.1 Differentiating varieties based on phenotypic differences

6.3.1.1 Consistent Differences 6.3.1.1.1 To ensure consistency in the differences of traits tested in planting trials, this trait is usually tested under two independent conditions. The condition. Annual and perennial varieties can be tested by planting two different growth cycles, or perennial varieties can be planted once and then tested in two different growth cycles. Tests can be conducted at different growing seasons, or through planting at multiple points over a year. If the differences in traits cannot be determined, an additional test can be performed. Test cycle. See UPOV for specificity testing (TGP/9). 6.3.1.1.2 Traits less affected by the environment, if the growing environment is always consistent, such as in a greenhouse with controlled temperature and light. There's no need to test two cycles. 6.3.1.1.3 For varieties requiring testing over two or more cycles, if the planting trial includes screening of traits via molecular markers and technical questionnaires... The selected similar varieties, after a period of testing, showed that the phenotypic expression of the applied variety and the similar varieties was normal and the differences were very significant, and no abnormalities were found. Other known varieties that are more similar to the applied variety, and which meet the consistency and stability standards, do not need to be tested in a second cycle. 6.3.1.1.4 The DUS testing guidelines for each relevant plant variety should specify the number of independent testing weeks required to demonstrate sufficient consistency in intervarietal differences. Period (e.g., several years or several separate locations or different environments under specific circumstances).

6.3.1.2 Significant differences 6.3.1.2.1 Types of Trait Expression Determining whether the difference between two varieties is significant depends on many factors, especially the type of expression of the tested trait, i.e., qualitative. Is it a qualitative trait, a quantitative trait, or a pseudo-qualitative trait? For composite traits, if the individual traits constituting the composite and the composite trait themselves satisfy the consistency criterion... The combined trait can be used as a specific trait. 6.3.1.2.2 Quality Properties For quality traits, according to the DUS testing guidelines, if one or more traits are expressed in different

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states, then the two varieties are considered to be in different states. There are significant differences in this trait. If the trait is expressed in the same state, the difference is considered not significant. 6.3.1.2.3 Quantitative traits For quantitative traits, specificity is determined based on the variety's propagation method and observation method, as specified in 6.3.2.2.2, 6.3.3.3.2, and 6.3.3.4. Other methods were used. 6.3.1.2.4 Pseudo-quality traits For pseudo-quality traits, the DUS testing guidelines may be insufficient in determining specificity using different expression states of the trait. Specific situations... The description of traits may differ significantly between varieties in the same expression state, see 6.3.2.2.3.

6.3.2 Specificity evaluation without using statistical methods

6.3.2.1 Adjacent Comparison Method Specificity evaluation is based on direct visual comparison between varieties that are adjacent or closely related to each other in planting trials. This method requires one variety. The traits can be visually observed and the trait expression can be represented by a test record. If the variation within a variety is minimal, then specificity should be determined by visual inspection of adjacent plants. If the variation within a variety is significant, such as in cross-pollination... For varieties and certain types of hybrids, this method should be used with caution to evaluate specificity.

6.3.2.2 Code Comparison Method 6.3.2.2.1 Quality Properties Codes or records that allow direct comparison of trait expression states. If two varieties have one or more quality traits whose expression states are... The two different codes in the DUS testing guidelines indicate that the two varieties are significantly different. 6.3.2.2.2 Quantitative traits The difference between the two codes usually indicates a significant difference, but this can vary depending on the variety's testing location, year, environment, or the degree of trait expression. Influenced by factors such as, the difference may be greater or less than two codes. When using codes to determine specificity, it is advisable to consider the range of trait expression states and the experimental The impact of environmental change. 6.3.2.2.3 Pseudo-quality traits Determining specificity solely based on different expression states of a trait is insufficient; sometimes, two varieties with the same expression state exhibit significant differences, even in adjacent varieties. Visual comparisons should take into account variations within the variety. 6.3.2.2.4 Evaluation of varieties with the same code For varieties with the same code, if the expression status and code of all varieties are obtained from the same planting trial, they are generally considered not to have the same expression status. Significant differences exist. Specificity may be determined in subsequent planting trials through adjacent comparisons or statistical analysis. Statistical methods can be used to classify... The specificity of a variety must meet the requirements of 6.3.3.

6.3.2.3 Evaluation of Individual Variety Records The DUS testing guidelines, based on individual test records (non-code) for each variety, determine the magnitude of the trait difference required for specificity, which is different from the code method. This depends on

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