

EUROPEAN CODE OF PRACTICE FOR JASMINE RICE

1. Introduction

1.1 This Code has been produced and agreed by the Federation of European Rice Millers. Hereinafter, the signatory to the Code shall be referred to as the 'Association'.

1.2 Members of the Association are responsible for the importation, milling and packaging of the majority of Jasmine rice marketed in the European Union. They strive to uphold the reputation of Jasmine rice as a rice with its own special properties, and prevent any attempt to adulterate Jasmine rice or make false claims about its geographical or botanical origin.

1.3 The scope of this Code of Practice is restricted to the labelling of Jasmine rice. The Code of Practice lays down the minimum specifications for Jasmine rice (*Oryza sativa* L.) sold in the European Union, and applies to both prepacked and non-prepacked rice, as well as to where rice is used as an ingredient in another food. This Code of Practice does not pertain to Basmati rice, as a separate Code specific to Basmati rice already exists and is available on the FERM website (www.ferm-eu.org).

1.4 Some EU Member States have national legislation in force that establishes stricter standards than the specifications set out in this Code. Where this is the case, operators must ensure that Jasmine rice complies with the applicable national legislation.

1.5 All Jasmine rice imported and sold in the European Union is subject to the horizontal rules regarding food information established by Regulation (EC) No 178/2002 and Regulation 1169/2011 on the provision of food information to the consumer. The trade will use this Code of Practice to ensure the authenticity of Jasmine rice and that consumer expectations for consistent and high-quality Jasmine rice are met.

1.6 Although the Code is voluntary, operators who choose not to comply with its provisions must nevertheless meet the same minimum legal requirements and be able to demonstrate that they have taken reasonable precautions and exercised all due diligence to ensure the authenticity of their Jasmine rice.

2. Definition of Jasmine Rice

2.1 “Jasmine rice” is the customary designation for selected cultivars of ‘soft-cooking’ long-grain aromatic rice (*Oryza sativa*), primarily – but not only – cultivated in Thailand, Cambodia, Vietnam, and Laos. These varieties are distinguished by the presence of 2-acetyl-1-pyrroline, a volatile compound responsible for their characteristic floral, pandan-like, aroma. Jasmine rice exhibits a low amylose content, contributing to its soft, slightly cohesive texture upon cooking. The colour is described as pearly and white as the Jasmine flower. Although both “Jasmine rice” and “Fragrant rice” are commonly used synonyms, the term “Jasmine rice” will be used throughout this document for clarity and consistency.

2.2 The minimum requirements for Jasmine rice varieties, such as grain dimensions, amylose content, and aroma, are listed in Table 1. Hom Mali and Phka Malis rice varieties possess specific minimum characteristics, defined in their respective standards, which must be met.

2.3 Jasmine rice DNA based authenticity testing

Considering the reasoning in Annex I along with the need for a clear, harmonized, and objectively measurable European technical standard—including assurance of the presence of aromatic rice and the prevention of adulteration—the following general classification of Jasmine rice varieties by category should be adopted:

Jasmine Rice

- **Thai “Hom Mali” Jasmine Rice** is a family of Jasmine varieties according to the TAS 4000-2017 standard, possessing a purity level of at least 92% DNA of Hom Mali varieties (Kao Dok Mali 105, RD 15 - also known as Kor Khor 15). Thai Hom Mali rice trademark can be used.
- **Cambodian “Phka Malis” Jasmine Rice** is a family of Jasmine varieties according to the CS053:2014 standard, possessing a purity level of at least 85% DNA of Phka Malis varieties (Phka Rumduol, Phka Romeat, Phka Rumdeng).
- **Jasmine Rice** is defined as rice with a minimum purity level of 80%. Compliance may only be demonstrated by one of the following methods:
 - Minimum 80% DNA varietal purity – verifying the presence and proportion of the Jasmine varieties listed in Table 2 (a non-exhaustive reference list of the most common varieties)

OR

- Minimum 80% DNA fragrance gene (*fgr*) purity – verifying the presence and proportion of the fragrance gene (*fgr*) as described in Annex 1.

3. Labelling of Jasmine Rice

3.1 The description “*Jasmine rice*” shall only be applied to aromatic rice varieties primarily – but not only¹ – cultivated in Thailand, Cambodia, Laos, or Vietnam, particularly those recognized for their characteristic fragrance, long grain shape, and soft texture when cooked.

3.2 When the product is described as “Jasmine rice”, the inclusion of non-Jasmine varieties must not exceed the purity levels described in paragraph 2.3. This tolerance accounts for unintentional admixture due to seed impurities or handling at origin.

3.3 If the product is a named blend of two or more rice varieties or types (e.g. *Blend of Jasmine and Long Grain rice*), the nature of the mixture must be clearly disclosed to consumers in line with the Commission Notice on Quantitative Ingredient Declaration (QUID) as set out in 2017/C 393/05 (or any subsequent update). The Jasmine component must still comply to the definition of Jasmine rice stated in paragraph 2.3.

3.4 The specific variety name (e.g., *Hom Mali*, *Phka Malis*, *ST25*) may be provided voluntarily.

3.5 If the proportion of broken grains exceeds 20%, the product name must reflect this (e.g. *Jasmine with broken grains*). Where broken grains are present in amounts between 10% and 20%, the term “Jasmine” must be qualified to indicate that it is a value or economy product. Products labelled simply as “Jasmine rice” must contain less than 10% broken grains. A grain is considered broken if one quarter or more of its length is missing.

4. Modification of Approved List

4.1 The Code of Practice will be reviewed and updated from time to time and the addition of varieties considered on a regular basis by the Association.

¹ There are aromatic rice varieties grown in other countries, including countries in the European Union. Some of these varieties are listed in Table 2 of the EU Code of Practice for Jasmine Rice.

5. Methodology

5.1 Method of testing *fgr* gene

There are several methods for the analysis of the *fgr* gene reported in literature. The first developed by Bradbury et al. in 2005 is a multiplex PCR method with 4 primers that amplify three possible fragments: a positive control of approximately 580 bp to confirm amplification, a 257 bp product from fragrant rice (*fgr*) and a 355 bp product from non-Jasmine rice. Amplified DNA fragments can be analysed quantitatively by agarose gel or capillary electrophoresis. The method is performed by private labs under ISO 17025 accreditation since over 10 years and is widely accepted in the international trade. Further methods based on real-time and digital PCR were developed by official authorities and private labs (for instance, the Food Control Authority of Canton Zurich, Eurofins in Germany, and SGS in India).

5.2 The complete methodology for determining “Jasmine” rice varieties is available on the FERM website (www.ferm-eu.org). New methodologies will be included on the FERM website.

6. Transition

6.1 This Code comes into effect for products packed and labelled after 1 April 2027.

7. Review

7.1 All parties agree to review the Code as and when required.

Table 1 - Minimum characteristics for varieties of Jasmine rice when milled, raw

Parameter	Jasmine rice requirement
Average pre-cooked length	> 6.0 mm (Hom Mali: > 7.0 mm)
Amylose content	13-20% (Hom Mali: 13-18%) at the moisture level of 14%
Length/breadth ratio	≥ 3.0 (Hom Mali: ≥ 3.2)
Typical Natural Fragrant Aroma	Present

Table 2 – Non-exhaustive reference list of most common varieties

KDM105 (Hom Mali)	Thailand
RD15 (Hom Mali)	Thailand
Pathum Thani 1	Thailand
Phka Romeat	Cambodia
Phka Rumdeng	Cambodia
Phka Rumduol	Cambodia
Sen Kra Oub	Cambodia
Sen Pidao	Cambodia
SRO Ngear (with <i>fgr</i> gene) ²	Cambodia
Champeï	Cambodia
Jasmine 85	Vietnam
NÀNG HOA 9	Vietnam
ST 20	Vietnam
ST 21	Vietnam
ST 24	Vietnam
ST 25	Vietnam
OM 18	Vietnam
OM4900	Vietnam
VD 20	Vietnam
LT 28	Vietnam
DT 8	Vietnam

² For SRO Ngear the minimum 80% DNA varietal purity must be completed by the minimum 80% DNA fragrance gene purity.

ANNEX 1 – Argumentation and background of Jasmine testing

The definition of authenticity for Jasmine rice is less clearly standardized than that for Basmati rice. The Thai standards TAS 4000-2017 and TAS 4001-2017 specify, respectively, the Hom Mali varieties KDM105 and RD15, and other Thai aromatic rice varieties including Pathum Thani 1. The Cambodian Milled Rice Standard CS053:2014 (Cambodia Rice Federation) classifies Phka Romeat, Phka Rumdeng, and Phka Rumduol as Jasmine varieties, and Sen Kra Oub and Sen Pidao as common Jasmine rice; Sro Ngear may also be included. Vietnam has no official national standard for Jasmine rice. However, the EU–Vietnam Free Trade Agreement lists nine varieties as Jasmine rice (Jasmine 85, VD20, Nàng Hoa 9, ST5, ST20, RVT, OM4900, OM5451, and Tai Nguyen Cho Dao) that are eligible for import duty exemption. Notably, OM5451 does not qualify as Jasmine rice due to the absence of the fragrance gene.

DNA fingerprinting, as applied under the Basmati Code of Practice, is not sufficient for all Jasmine varieties because officially recognized reference materials are lacking; currently, only Cambodian reference materials are formally available. Nevertheless, reference samples for most commercially relevant varieties have been obtained through the international rice trade, and their authenticity has been confirmed by genetic clustering analysis (Nader et al., 2026)³.

Alternative approaches for authenticity testing of Jasmine rice have been evaluated. Among these, Option 3—DNA testing targeting the fragrance gene—was identified as the most valuable quantitative method for Jasmine authenticity assessment.

(1) Analysis of the aroma compound 2-acetyl-1-pyrroline (2-AP) is unreliable as a quantitative marker due to its high volatility and the possibility of artificial addition. Furthermore, the content reveals nothing about the purity of the rice.

(2) Physico-chemical tests (boiling test, alkali spreading value, iodine test, amylose content), as described in the Thai standards, are indicative of cooking quality; however, they do not demonstrate the presence of the characteristic natural fragrant aroma and are therefore not conclusive for Jasmine authenticity.

(3) DNA testing of the fragrance gene (BADH2.1): The *fgr* allele consists of an 8 bp deletion in exon 7 of the BADH2 gene (Bradbury et al., 2005a)⁴. This mutation inactivates betaine

³ Nader, W.F., Steele, K.A., Krickl, L., Schubbert, R., & Brendel, T. (2026). *DNA markers for Basmati authentication have the power to distinguish among other global economically relevant rice varieties and to evaluate their genetic background*. Food Control, 180, 111604. <https://doi.org/10.1016/j.foodcont.2025.111604>.

⁴ Bradbury, L. M. T., Henry, R. J., Jin, Q., Reinke, R. F., & Waters, D. L. E. (2005). *A perfect marker for fragrance genotyping in rice*. Molecular Breeding, 16, 279-283. <https://doi.org/10.1007/s11032-005-0776-y>.

aldehyde dehydrogenase 2, resulting in the accumulation of 2-AP (Vanavichit & Yoshihashi, 2010)⁵. Although other BADH2 mutations have been described in the literature⁶, BADH2.1 is the most prevalent and currently the only widely accepted genetic marker for quantitative authenticity testing of Jasmine rice, for the following reasons:

- The *fgr* allele is present in all Jasmine rice varieties commercially traded from Thailand, Cambodia, and Vietnam that are recognized as such in Thailand and Cambodia. It is also present in all Basmati varieties and in Iranian Sadri.
- Pure-line selections of traditional Jasmine rice (Hom Mali KDM105, Phka Romeat, Phka Rumdeng, Phka Rumduol) all contain the *fgr* allele and are genetically highly related. Jasmine 85 and Nàng Hoa 9 were derived from Hom Mali and also carry the *fgr* allele.⁷
- The Thai variety Pathum Thani 1 carries the *fgr* allele and is genetically closely related to the Vietnamese ST varieties, which were derived from Pathum Thani 1.⁸
- Sen Kra Oub, Sen Pidao, and one variety of SRO Ngear from Cambodia also contain the *fgr* allele. Another variety of SRO Ngear does not contain the allele and does not qualify as Jasmine rice.⁹
- Of the varieties declared as Jasmine rice under the EU–Vietnam Free Trade Agreement (2019), OM5451 does not contain the *fgr* allele, does not qualify as Jasmine rice, and is not traded by Vietnam as a Jasmine variety.
- The *fgr* allele is quantifiable and directly proportional to the percentage of Jasmine rice present.

⁵ Vanavichit, A., & Yoshihashi, T. (2010). *Molecular Aspects of Fragrance and Aroma in Rice*. In J.-C. Kader, & M. Delseny (Eds.), *Advances in botanical research* (Vol. 56, pp. 49–73). Academic Press. (Chapter 2) in. <https://doi.org/10.1016/B978-0-12-381518-7.00002-9>.

⁶ IRRI and Cornell University described nine additional BADH2 mutations (not confirmed to cause fragrance), designating BADH2.1 as mutation no. 1. IRRI and Wageningen University showed that certain South and Southeast Asian rice varieties produce 2-AP without *fgr*. A French research group (Montpellier) identified a 3 bp insertion in BADH2 in Myanmar rice.

⁷ Nader et al. (2026) demonstrated that DNA markers for Basmati authentication can also distinguish other globally relevant rice varieties and provide insights into their genetic background. They showed that the *fgr* allele occurs in all major commercialized Jasmine rice varieties from Thailand, Cambodia and Vietnam.

⁸ See footnote 7.

⁹ See footnote 7.