TRADE DEVELOPMENT AUTHORITY
OF PAKISTAN

BOOK OF SPECIFICATIONS FOR "BASMATI"

Agro Food Division
Trade Development Authority of Pakistan

Revised

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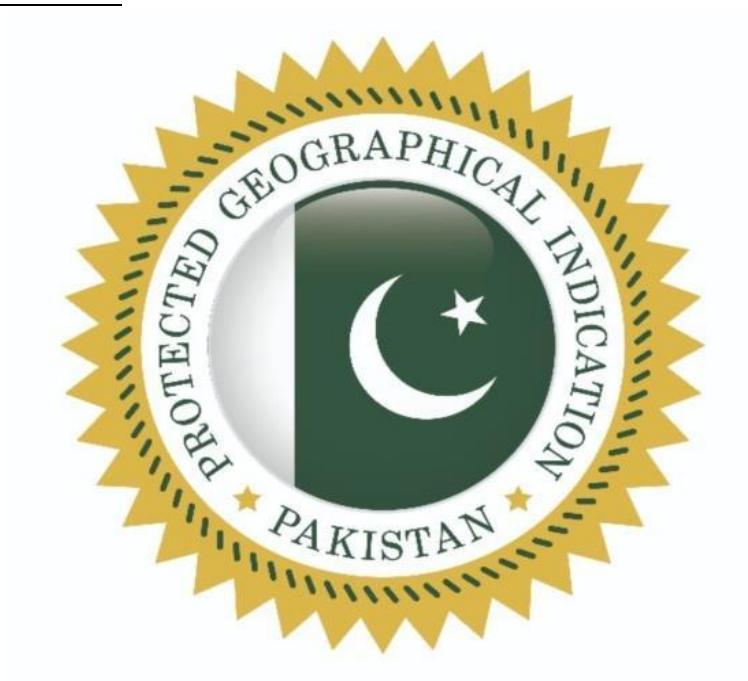

PROTECTED GEOGRAPHICAL INDICATION
PAKISTAN


Basmati Rice

PRODUCT TYPE

Rice

A) PRODUCT NAME

"BASMATI"

'Basmati' is a non-geographical name derived from two Punjabi words: 'bas' meaning 'aroma' and 'mati' meaning 'soil'. 'Basmati' is registered as a geographical indication pursuant to the Geographical Indications (Protection and Registration) Act 2020 (Act No. XVIII of 2020).

B) PRODUCT DESCRIPTION

Basmati' rice is a special photosensitive, long grain, aromatic rice exclusively grown and produced in specific areas of the Indo-Gangetic Plains defined in Section C.

The distinctive characteristics of 'Basmati' rice grown in Pakistan are its long slender kernels with high length breadth ratio, an exquisite aroma, sweet taste, soft and fluffy texture and delicate curvature. The aroma is due to a harmonious combination of various chemical compounds, among which 2-acetyl-1-pyroline (2AP) is predominant and gives 'Basmati' rice its distinctive fragrance and flavour. Cooked 'Basmati' grains retain high integrity on cooking due to the low glycemic index, which is typical of 'Basmati' rice. The sweet taste and distinct mouth feel of cooked 'Basmati' rice is due to various factors including intermediate amylose content leading to soft and fluffy texture with high integrity of grain on cooking.

The special characteristics of 'Basmati' rice result from the natural and human factors involved in the sowing, harvesting and processing of 'Basmati' rice.

(i) Principal characteristics

The principal characteristics of 'Basmati' rice grown in Pakistan are as follows:

Sr. No	Parameters	Value
1.	Minimum pre-cooked grain length (after milling)	6.50mm
2.	Average pre-cooked grain breadth	≤1.9mm
3.	Minimum length/breadth ratio of pre-cooked milled rice	≥3.50
4.	Aroma	Typical 'Basmati' flavor
5.	Gel consistency	Soft
6.	Texture of cooked grain	No stickiness
7.	Amylose content	19-26%
8.	Alkali Spreading Value (ASV) range	4-7
9.	Photoperiod sensitivity	Photoperiod sensitive

10.	Minimum average cooked rice length	12.00mm
11.	Minimum cooked rice length/pre-cooked rice length ratio OR minimum elongation ratio on cooking	1.70
12.	Average volume expansion ratio	3.50
13.	Taste and mouth feel	The sweet taste and distinct mouth feel of cooked 'Basmati' rice: soft and fluffy texture with high integrity of the cooked grain

(ii) Botanical classification

'Basmati' rice has the following botanical classification:

Kingdom	Plantae
Division	Magnoliophyta
Class	Liliopsida
Order	Poales
Family	Gramineae or Poaceae
Tribe	Oryzeae
Genus	Orzya
Species	sativa
Number of Chromosomes	24
Genome	AA

(iii) Physical characteristics

'Basmati' rice also has the following physical characteristics:

Tillering	High
Height	Tall
Lodging	Easily
Photoperiod	Sensitive
Cool Temperature	Sensitive
Grain Shattering	Easily
Grain type	Long
Grain texture	Non-sticky

(iv) Varieties

'Basmati' rice is grown in Pakistan from varieties that must comply with the following two cumulative requirements: (i) they must have at least one traditional 'Basmati' rice variety/land race in the lineage tree of breeding history; and (ii) they must be registered under Pakistan's Seeds Act 1976.

Only those varieties that have at least one traditional 'Basmati' rice variety/land race in the lineage tree of breeding history can be registered as 'Basmati' varieties under Pakistan's Seeds Act 1976. Therefore, all registered varieties should be derived from the traditional "mother" variety 'Basmati 370' or a related land race.

The varieties currently registered under Pakistan's Seeds Act 1976 are:

Sr.	Variety name	Year of approval	No. and date	Institute
1.	Basmati 370	1933	NO. 89/14-178-V dated 10/08/1934	Rice Research Institute, Kala Shah Kaku
2.	Basmati C 622	1964	NO. 13919-44 dated 24/10/1964	Rice Research Institute, Kala Shah Kaku
3.	Basmati Pak	1969	NO. 2778-SOA IIV69 dated: 19/03/1969 Agri. Dept.	Rice Research Institute, Kala Shah Kaku
4.	Basmati 198	1972	NO. 13261-76/13-1 1 dated 14/09/1972	Rice Research Institute, Kala Shah Kaku
5.	Kashmir Basmati (Kashmir Nafees)	1977	**SRO 1162 (I) 93 dated 01/12/1993**	Nuclear Institute of Agriculture and Biology, Faisalabad
6.	Basmati 385	1985	NO. PSC/HQ - Procl 141851755-72 dated 10/10/1985	Rice Research Institute, Kala Shah Kaku
7.	Super Basmati	1996	NO. PSC/HQ - Coord/9/96/659 dated 26/06/1996	Rice Research Institute, Kala Shah Kaku
8.	Basmati 2000	2000	NO. PSC/HQ-Coord/19/02/497 -516 dated 13/04/2002	Rice Research Institute, Kala Shah Kaku
9.	Shaheen Basmati	2000	NO. PSC/HQ - Coord/19/02/497 -516 dated 13/04/2002	Rice Research Institute, Kala Shah Kaku

10.	Basmati 515	2011	NO. PSC/HQ - Coord/44/11/07-32 dated 08/01/2011	Rice Research Institute, Kala Shah Kaku
11.	PK 1121 aromatic	2013	NO. PSC/HQ - Coord/ 44/2013/728-64 dated 12/06/2013	Rice Research Institute, Kala Shah Kaku
12.	Punjab Basmati	2016	NO. PSC/HQ-Coord/44/16/88 dated 10/08/2016	Rice Research Institute, Kala Shah Kaku
13.	Kissan Basmati	2016	NO. PSC/HQ-Coord/44/16/88 dated 10/08/2016	Rice Research Institute, Kala Shah Kaku
14.	NIAB Basmati 2016	2016	NO. PSC/HQ - Coord/44/16/88 dated 10/08/2016	Nuclear Institute of Agriculture and Biology, Faisalabad
15.	NOOR Basmati	2017	NO. PSC/HQ - Coord/44/17/87 dated 16/06/2017	Nuclear Institute of Agriculture and Biology, Faisalabad
16.	Super Gold	2019	NO. PSC/HQ-Coord/19/44/228 dated 07/10/2019	Rice Research Institute, Kala Shah Kaku
17.	Super Basmati 2019	2019	NO. PSC/HQ – Coord/19/44/228 dated 07/10/2019	Rice Research Institute, Kala Shah Kaku
18.	NIBGE-Basmati 2020	2021	NO. PSC/HQ - Coord/21/44/08 dated 20/01/2021	National Institute for Biotechnology and Genetic Engineering, Faisalabad
19.	PK 2021 aromatic	2021	NO. PSC/HQ - Coord/21/44/08 dated 20/01/2021	Rice Research Institute, Kala Shah Kaku
20.	KSK 111 H	2021	NO. PSC/HQ - Coord/21/44/08 dated 20/01/2021	Rice Research Institute, Kala Shah Kaku
21.	Sona Super Basmati	2023	PSC/HQ-Coord/44/23/493 dated 20/03/2023	Rice Research Institute, Kala Shah Kaku

22.	Vital Super Basmati	2023	PSC/HQ-Coord/44/23/493 dated 20/03/2023	Rice Research Institute, Kala Shah Kaku
23.	NIAB HT 39	2023	PSC/HQ-Coord/44/23/493 dated 20/03/2023	Nuclear Institute of Agriculture & Biology, Faisalabad
24	NIAB HT 18	2023	PSC/HQ-Coord/44/23/493 dated 20/03/2023	Nuclear Institute of Agriculture & Biology, Faisalabad

'Basmati' rice comes to maturity in the months of October or November.

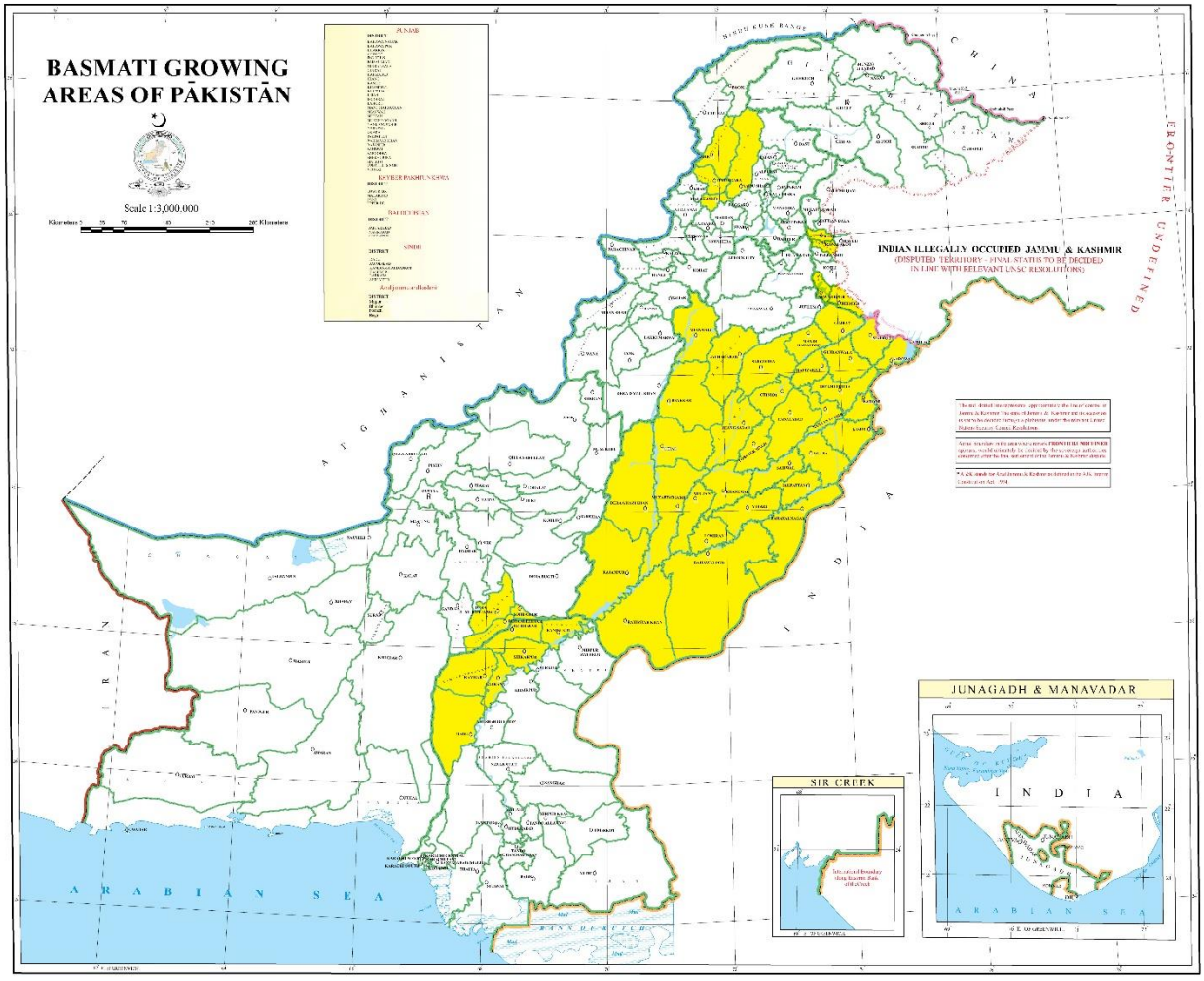
C) GEOGRAPHICAL AREA

The geographical area where 'Basmati' rice is being grown in Pakistan spreads from the region that is part of northern Pakistan in Punjab, Azad Jammu and Kashmir, and Khyber Pakhtunkhwa ("KPK"), up to parts of lower Sindh and south-eastern Baluchistan .

Province	**Districts**
Punjab	Sialkot, Gujranwala, Hafizabad, Sheikhupura, Lahore, Kasur, Gujrat, Mandi Bahauddin, Narowal, Faisalabad, Nankana Sahib, Chinnot, Jhang, Toba Teksingh, Sargodha, Okara, Sahiwal, Pakpattan, Khushab, Mianwali, Bhakkar, Multan, Lodhran, Khanewal, Vehari, Bahawalpur, Rahim Yar Khan, Bahawalnagar, Muzaffargarh, Layyah, D G Khan, Rajanpur.
Sindh	Shikarpur, Jacobabad, Kashmore, Larkana, Kambar, Shadadkot, Dadu.
KPK	Malakand Division (Districts of Malakand, Dir, Swat).
Baluchistan	Naseerabad, Jaffarabad, Sohbatpur.
Azad Jammu & Kashmir	Mirpur, Bhimber, Poonch , Bagh.

The coordinates of district headquarters of rice cultivating areas of Pakistan are annexed at Annex A.

Reference is made in this regard to the yellow area in the following map



The abovementioned areas will hereafter be referred to together as the **"Geographical Area"**.

D) EVIDENCE OF PRODUCT ORIGINATING IN THE GEOGRAPHICAL AREA

(i) Growing and production of 'Basmati' in the Geographical Area

'Basmati' rice is grown and produced in a particular geographical region of the Indian sub-continent: the Indo-Gangetic Plains ("IGP"). The IGP include the provinces of Punjab, Sindh, KPK and Baluchistan in Pakistan and areas of Azad Jammu and Kashmir.

The data collected by the Agriculture Census Organization of Pakistan during the last decades and the Directorates of Agriculture from the provinces of Punjab, Sindh, KPK and Baluchistan,[1] as well as the data collected by the Crop Reporting Service of Azad Jammu and Kashmir (Department of

[1] These statistical data are endorsed by the Government of Pakistan and used in all surveys and reference materials at national level in Pakistan as well as in international forums. The Economic Wing of the Ministry of National Food Security & Research of Pakistan is responsible for the collection, compilation and dissemination of agricultural statistics at national and international level. The Wing collects crops area, production and other agricultural statistics from the Federal and Provincial Governments of Pakistan, FBS and other department/agencies. This data is compiled, computerized and disseminated in the form of publications. The district-wise estimates of major and minor crops including cereals, pulses, oilseeds, fruit vegetables and condiments are collected, compiled and published by Economic Wing. The statistics compiled by the Economic Wing can be accessed via the following link: http://mnfsr.gov.pk/pubDetails.aspx.

Agriculture Azad Jammu and Kashmir), provide an historical overview since 1994-95 and 1952, respectively, demonstrating that 'Basmati' rice has been grown for a long time in the Geographical Area. provide an historical overview since 1994-95, demonstrating that 'Basmati' rice has been grown for a long time in the geographical area.

The 'Basmati' rice varieties approved by the Federal Seed Certification Department of the Government of Pakistan, are included in the official statistics, under the category 'Basmati' rice and are approved for cultivation within the territory of the Islamic Republic of Pakistan.

The cultivation of 'Basmati' rice in the Geographical Area' is confirmed in various research publications which have been summarized below:

- **Azhar & Muhammad (1984),** Domestic Resource Cost of Rice'. Pakistan J. Appl. Econ., 3, 139-156, highlights that:

  "Pakistan has a comparative advantage in the international market for Basmati. A number of rice varieties are grown in Pakistan; two of these Basmati and Irri constitute four-fifth of total rice production and dominates exports. Basmati has fetched high prices in the international markets. In recent years its price is more than double the prices of Irri"[2].

- **R.K. Singh, U.S. Singh and G.S Khush (2000)**, *Aromatic Rice, Oxford & IBH Publishing Co. Pvt. Ltd.* (p. 270), where it is pointed out that the main growing areas of 'Basmati' rice are Punjab, Sindh, NWFP (North West Frontier Province, now known as KPK[3]) and Baluchistan.

- **Cheema (2006)**, *Mutation Breeding for Rice Breeding in Pakistan: Achievements and Impact*, Plant Mutation Reports, Vol. 1, No 1, which shows that a variety of 'Basmati' rice known as 'Kashmir Basmati' has been developed and was released by the Nuclear Institute for Agriculture and Biology (NIAB) in Pakistan in **1977** specifically for cultivation in Azad Jammu and Kashmir (**"AJK"**). The article mentions that a high quality rice variety/germplasm 'Kashmir Basmati' has been developed and *'widely adopted*' (…). *"Kashmir Basmati", a short duration and cold tolerant mutant, derived from Basmati-370 has been cultivated in high mountain areas since it was first approved for cultivation in Azad Jammu and Kashmir (AJK) in 1977, and is still being cultivated in about 22% of rice area in these ecologies.* [...] *About a 22% area of Swat Valley of A.J.K. is under Kashmir Basmati.'*

- **Dwijen Rangnekar & Sanjay Kumar (2010)**, *Another Look at Basmati: Genericity and the Problems of a Transborder Geographical Indication, 13 J. World Intell. Prop. 202 (2010):*

  "*Basmati rice is mainly grown in the Kalar tract of Punjab province, but is also grown in the other parts of the provinces of Punjab, Baluchistan and NWFP (North West Frontier Province) [reference is made in footnote 10 to 'Variety-Wise Area and Production of Rice Crops, table 1.8, p. 59, Pakistan Statistical Year Book, 2007, Federal Bureau of Statistics, Pakistan"].*

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[2] Azhar, R. A., & Mahmad, F. (1984), 'Domestic Resource Cost of Rice'. *Pakistan J. Appl. Econ.*, 3, 139-156. https://www.aerc.edu.pk/wp-content/uploads/2017/03/3rd-Paper-Page-139-156-1.pdf

3 The North-West Frontier Province was a province of British India and later of Pakistan. It was established on 9 November 1901 and known by this name until 2010, when it was redesignated as the province of Khyber Pakhtunkhwa (KPK) on 19 April 2010 following the passing of the Eighteenth Amendment to the Constitution of Pakistan.

- **Ashfaq *et al*. (2015)**, *Basmati rice a class apart (a review). Rice Research: Open Access. 3:4*, highlight the report of the Food and Agriculture Organization of the United Nations Statistics Division FAOSTAT 2012, mentioning that "*Pakistan is the 11th largest producer of rice in the world. Each year it produces an average of 6 million tonnes and together with the rest of South-Asia, the country is responsible for the supply of 30% of the World paddy rice output. Most of these crops are grown in the fertile land of Sindh and Punjab region with millions of farmers relying on rice cultivation as their major source of employment.*" Further, this report refers to Punjab, Sindh, Balochistan and KPK (formerly NWFP) as the growing areas for 'Basmati' rice." [4]

- **Zafar, Mahniya & Hamid, Naved & Arshad, Fatima (2020)**, *Are Agricultural Markets in the Punjab Technically Efficient?* The Lahore Journal of Economics, 89-138, 10.35536/lje.2020.v25.i1.a4, which confirms that in 2016-2017, 'Basmati' rice has been grown in Punjab, Sindh, KPK and Baluchistan.

(ii) Variety and user approval

Under the varietal approval process in Pakistan, the varieties pass through National Uniform Field Yield Trials and are checked for all relevant traits and composition before being approved as 'Basmati'. Hence, any 'Basmati' rice variety approved by the Federal Seed Certification Department and cultivated in the Geographical Area complies with the product specifications of 'Basmati' rice.

Any person willing to become an authorized user defined under Section 17 of Geographical Indications (Registration and Protection) Act 2020, after getting formal assent of the Trade Development Authority of Pakistan (TDAP), has to submit an application for registration as authorized user of the geographical indication 'Basmati' with the Registrar Geographical Indications, Intellectual Property Office of Pakistan. The Registrar Geographical Indications, Intellectual Property Office issues GI "Certificates of Registration" to the appropriate applicants, making them authorized users and notifies TDAP and Trading Corporation of Pakistan thereof.

(iii) Verification of compliance with the product specifications

The Ministry of Commerce of Pakistan has appointed Trading Corporation of Pakistan (Pvt.) Limited as the Authority competent under Section 13(1) of the Geographical Indications (Registration and Protection) Act 2020 (Act No. XVIII of 2020), to verify that rice being packed/shipped for export is sourced from the Geographical Area and meets the requirements of these specifications, as notified by the Government of Pakistan.

Authenticity certificates, including for the exportation of 'Basmati' rice to importing countries, are issued by Trading Corporation of Pakistan, whose address is mentioned in Section C of this document.

Trading Corporation of Pakistan has established a separate Rice Inspection Cell headed by General Manager reporting to Executive Director .The General Manager /Authorized Signatory who signs the authenticity certificates for importing countries.

[4] Ashfaq, M. (2015). 'Basmati rice a class apart (a review)'. *Rice Research: Open Access*. 3:4 https://www.omicsonline.org/open-access/basmatirice-a-class-apart-a-review-2375-4338-1000156.php?aid=63974

Trading Corporation of Pakistan has been appointed as the competent authority to carry out on-premise inspections by trained rice analyzers, verification of traceability documents proving that the 'Basmati' rice originates in the Geographical Area, and to issue authenticity certificates.

Trading Corporation of Pakistan's rice analyzers are trained by the Kala Shah Kaku Rice Research Institute to recognize 'Basmati' rice based on physical characteristics.

In case of extra verification required by importing countries, Trading Corporation of Pakistan sends the requisite samples to the National Institute of Biotechnology and Genetic Engineering (NIBGE), Faisalabad, for DNA-based verification and analysis. This is notably the case for the exports to the European Union in view of the duty abatement granted to husked 'Basmati' rice under Commission Regulation (EC) No 972/2006 of 29 June 2006 laying down special rules for imports of Basmati rice and a transitional control system for determining their origin. In compliance with this Regulation, Trade Corporation of Pakistan issues authenticity certificates in respect of consignments of 'Basmati' rice for export to the European Union under this duty abatement scheme.
These procedures ensure that all rice being shipped as 'Basmati' complies with the product specifications of 'Basmati' rice and originates in the Geographical Area.

Finally, the Department of Plant Protection issues the required phytosanitary certificates ensuring that the goods also meet the phytosanitary measures of the importing country.

Traders using the name 'Basmati' in Pakistan for rice that does not comply with these specifications are liable to be prosecuted under Pakistan's Geographical Indications (Registration and Protection) Act 2020 (Act No. XVIII of 2020).

E) DESCRIPTION OF THE METHOD OF OBTAINING THE PRODUCT

The method of production of Pakistani 'Basmati' rice consists of six steps: land preparation, sowing, transplantation of seeds, irrigation, harvesting, and drying and storage:

1. Land preparation: puddling is common practice for land preparation of the paddy fields. It is helpful in ecological weeds control and transplanting of seedlings at proper depth;

2. Sowing: as 'Basmati' rice is photoperiod sensitive rice, the nursery is sown from 1st-20th June in order to obtain good production and quality;

3. Transplantation of seeds: nursery seedlings of 25-35 days are transplanted manually in puddled fields maintaining plant spacing of 22.5 cm (row to row and plant to plant) and placing two seedlings per hill. The optimal time for transplanting the seeds is during the first half of July. The quality of 'Basmati' rice is greatly influenced by the timing of transplanting. In normal conditions, if the traditional tall varieties of 'Basmati' rice are transplanted before 30th of June, they would attain excessive vegetative growth and are prone to lodging at the flowering or the grain filling stage. Seedlings should be planted shallow (2 to 3 cm deep) as deep planting takes more time for establishment and gives less tillering.

'Basmati' rice is grown with carbon enriched soil through farmyard manure application of 8-10 tons/ha or green manuring with legumes;

4. Irrigation: canal or underground water is applied for rice production. Irrigation water is kept standing in the fields for up to 2-3 weeks after transplantation, which not only helps in weeds control but also crop stand establishment. After this period, water is drained out and further irrigation is applied according to field moisture conditions;

5. Harvesting: harvesting of 'Basmati' rice takes place as soon as 90% of the grain matures, so as to avoid loss by shattering, lodging and physical damage to the grains. This operation is performed either manually or mechanically. Modified combine harvesters are then being replaced rapidly by paddy harvesters;

6. Drying and storage: the harvested crop is generally threshed the same day or as soon as possible and dried to a moisture content of 12-14 % to prevent the development of grain molds or any other fungal attack or insect damage during storage.

The following steps take place in the Geographical Area:

- Land Preparation and Propagation (sowing);
- Transplantation of seeds;
- Cultivation;
- Plantation management;
- Harvesting.

F) LINK BETWEEN THE QUALITY, REPUTATION OR OTHER CHARACTERISTICS OF THE PRODUCT AND THE GEOGRAPHICAL AREA

(i) Historical origin

The historical origin of 'Basmati' rice has been traced back to the 'Kallar tract' in the province of Punjab in Pakistan where it has been grown for centuries under the name 'Basmati' due to its unique and special aroma.

The first recorded reference to 'Basmati' rice can be found in the epic poem 'Heer'[5] by the great Punjabi poet Syed Waris Shah, that dates back to 1766 . Syed Waris Shah was a resident of a village of Jandiala Sher Khan, located in the 'Kallar' tract, in the district of Sheikhupura, lying between Rivers Ravi and Chenab in the Punjab Province of Pakistan. His work was translated in English around 1910 by Usborne. The second paragraph of chapter 16 describes several foods displayed for a wedding, including 'Basmati' rice.

[5] Also sometimes referred to as 'Heer and Ranjha' or 'The adventures of Heer and Ranjha'.

Not only the first recorded reference but also the modern understanding of 'Basmati' rice has its roots in Pakistan.[6] This is due to varietal improvement and breeding. In the beginning of the 20th century, a small rice R&D varietal development program was started under the Punjab Agriculture College in Lyallpur (now Faisalabad in Pakistan). In February 1926, the Department of Agriculture of the Punjab Province established a rice breeding and experimentation station named "Rice Farm" at Kala Shah Kaku (a town in the District Sheikhupura of Pakistan) under the immediate responsibility of Mr. Sardar Mohammad Khan.

A systematic plan for rice genetic resource collection was set out and an evaluation program was started at the Research Station at Kala Shah Kaku (now: Rice Research Institute Kala Shah Kaku or RRI-KSK).

Initial research work aimed to identify and purify seeds out of a vast number of heterogeneous mass of landraces grown in different areas. In 1927, about 503 single plant pure line cultures under test at Rice Farm were collected. After three years of comparative trials and critical evaluation of 503 land races, in 1929 the material was categorized into 16 distinct agro-commercial groups. These 16 groups were named: '**Basmati**', 'Begami', 'Muslrkan', 'Baru or Hansraj', 'Jhona', 'Jhoni', 'Jhona Klasarwala', 'Toga', 'Dhan', 'Sathm', 'Ratua', 'Sone', 'Palman', 'Kharsu', 'Santhi' and 'Red rice'.

On the basis of yield and grain quality, including aroma, accession no. 370 (collected from Kaulo Tarar, in the district of Hafizabad, in modern-day Pakistan) performed outstandingly and became very popular amongst famers as well as in the market. It was assigned the name 'Farmi Basmati', because it originated from the Rice Farm. In the meeting of 5 April 1933, the variety was approved with the name 'Basmati 370', which is considered the "mother" of all Basmati varieties developed to this day (see, *inter alia*, R.K. Singh, U.S. Singh and G.S Khush, *Aromatic Rice*, Oxford & IBH Publishing Co. Pvt. Ltd. 2000, p. 74 .

The first indication of a release of a pure line selection was done by the Rice Research Institute, Kala Shah Kaku (Punjab) in 1933 as 'Basmati 370' (see, *inter alia*, R.K. Singh, U.S. Singh and G.S Khush, *Aromatic Rice*, Oxford & IBH Publishing Co. Pvt. Ltd. 2000, p. 74 -.

(ii) Reputation

Historically, 'Basmati' rice has been associated in the public mind as a special long grain aromatic rice grown and produced in the Indo-Gangetic Plains. 'Basmati' rice traders, both in Pakistan or abroad, have been consistently using the name 'Basmati' to describe a special rice variety originating from the Geographical Area and possessing the characteristics set out in these specifications.

This public perception and recognition well-beyond Pakistani borders is evident from the general

[6] See, *inter alia*, *Races of rice in India* (pages 60-61), a 1910 literature overview on the races of rice in the subcontinent, that points out that 'Basmati' rice was primarily grown in Punjab, especially in Lahore, Sialkot and Montgomery (Sahiwal) districts of Punjab, situated in modern-day Pakistan (**Annex 16**).

body of information, such as the following:

1. The Cambridge Dictionary, which defines 'Basmati' as *"A type of South Asian Rice with Long Grain"*[7] ;

2. The Merrian-Webster Dictionary, which defines 'Basmati' as *"A cultivated aromatic Long Grain Rice originating from South Asia"* ;

3. The Food Encyclopedia (Jacques L. Rolland and Carol Sherman, 2006), which states: "*basmati rice – a narrow long-grain rice grown in the foothills of the Himalayas*"

4. The Ultimate Indian Cookbook (Midnula Baljekar, 2007), which states that "*Basmati is a slender: long grain, milled rice grown in northern India, the Punjab, parts of Pakistan and in the foothills of the Himalayas"*

5. The English World Dictionary, which defines *'Basmati rice'* as *"A type of South Asian Rice with Long Grain*"

6. Glosbe, which defines 'Basmati' as a "*variety of long grain grown in India and Pakistan, notable for its fragrance"*[8]

7. The Hindu, 'Basmati Developed at Least 250 Years Ago', 21 August 1998: "'Historic evidence shows that Basmati is a distinctive cultivar developed by the farmers of India and Pakistan at least 250 years ago, and grown in many parts in these two countries ever since,' says Dr. Y. L. Nene, Chairman, Asian Agri-History Foundation, Secunderabad, Andhra Pradesh" .

8. The Kitchen Dictionary, which defines 'Basmati' as "*a long-grain rice with nutty flavor and firm texture, possibly due to the fact that it is aged. Basmati (...) has been used in India and Pakistan for thousands of years and is excellent with curries*";

9. Food News, 'How To Cook PERFECT Basmati Rice Recipe': "Tips for perfect Basmati Rice. Buying the right kind of rice – Royal Basmati Rice is something we have been using for years and have always appreciated the consistent quality. There are plenty of other brands available but make sure to buy the Indian or Pakistani ones to get the authentic Basmati rice" ;

10. Trade β blog (reflexion on trade and more): '*To recap, geographical indications (commonly 'GIs') are the names of products identifying both their origin and their characteristics. They are usually place names. But they don't have to be — 'Basmati' is a geographical indication identifying a type of rice when grown in parts of India and Pakistan'* ;

11. A report by the United States International Trade Commission, which states that "*Pakistan produces and exports both basmati and long grain rice. Its basmati exports*

[7] https://dictionary.cambridge.org/dictionary/english/basmati
[8] https://glosbe.com/en/ur/basmati

account for about one-third of global basmati exports, sent mostly to the Middle East, the EU, and the United States"[9] ;

This also appears from:

- The Agreement between the European Union and the Islamic Republic of Pakistan titled Agreement in the form of Exchange of Letters between the European Community and Pakistan pursuant to Article XXVIII of the GATT 1994 relating to the modification of concessions with respect to Rice provided for in EC schedule CXL Annexed to the GATT 1994, as approved by Council Decision 2004/618/EC of 11 August 2004 (OJ L 144, 31.5.2006, p. 24). This agreement repealed and replaced Commission Regulation (EEC) No 81/92 in which the European Commission recognized that 'Basmati' rice has been and still is harvested and grown in specific areas of Pakistan and India

- a report from the Commission to the Council on the operation of the agreements concluded in the framework of GATT Article XXVIII procedure in the rice sector, which defines 'Basmati' as "*High quality indica rice grown only in India and Pakistan*"[10]

Owing to its special flavor, aroma and cooking properties that are best suited for Asian dishes such as *biryani* and *pulao*, 'Basmati' rice grown in Pakistan has become very popular in Pakistan as well as in numerous foreign countries. 'Basmati' rice has been and continues to be exported to major countries all over the world including Europe, Saudi Arabia, Kuwait, United Arab Emirates, the United Kingdom, the United States of America and Canada. From 2015 to 2022, Pakistan's exports of 'Basmati' rice to the European Union has increased from 80.93 million euro to 249.96 million euro.

(iii) Link between the Geographical Area and the quality, reputation or other characteristics of 'Basmati'

'Basmati' rice obtains its specific aroma and texture in the Geographical Area, *inter alia* due to environmental factors (such as interaction with the relatively high humidity, the solar conditions, the mild temperature, and the local alkaline, clayey basin soil and water quality), and human factors (namely the methods of production described above).
Taste and mouth feel characteristics are due to the prolonged sunshine in the longer days in the flowering months of 'Basmati' rice in the Geographic Area. Ageing and pre-soaking of 'Basmati' rice is known to enhance these characteristics.

Timing and spacing of the seeds as well as ensuring there is carbon-enriched soil and the maintenance of standing water and irrigation techniques significantly influence the physiology of the Basmati crop.

Historical, traditional, cultural and social elements associated with 'Basmati' rice give it the global reputation as a geographical indication. Any member of the trade or public in Pakistan

[9] See John Giamalva and Marin Weaver, United States International Trade Commission, 'Rice: Global Competitiveness of the U.S. Industry' (4530, April 2015) 182. https://www.usitc.gov/publications/332/pub4530.pdf.

[10] Report from the Commission to the Council on the operation of the agreements concluded in the framework of the GATT Article XXVIII procedure in the rice sector (Brussels, 30 June 2009). https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52009DC0314&from=GA

or abroad ordering 'Basmati' rice or seeing rice advertised or offered for sale as 'Basmati' rice will expect the rice so ordered, advertised or offered for sale to be the rice cultivated, grown and produced in the Geographical Area with the special characteristics as set out in the present Specifications.

As part of the Indo-Gangetic Plains, all parts of the Geographical Area are irrigated and/or tributaries of the Indus River system. They share common characteristics in terms of water quality, humidity, solar radiation, day length, water supply, soil and temperature. Over the years, while some parts of Punjab have become less suitable to grow 'Basmati' rice, other neighboring areas have become more suitable, notably because of changing climatic conditions.

'Basmati' rice obtains its specific aroma and texture in the Geographical Area, *inter alia* due to the following environmental factors:

1. High humidity: During the grain filling period, which is the most crucial for the best expression of 'Basmati' rice quality traits, average relative humidity in the 'Basmati' rice growing region ranges from 60 to 65 %. The humid atmosphere helps to make the rice grains larger in size, translucent, glossy in texture, aromatic and pleasant in taste. However, humidity is not a stand-alone factor to decide quality parameters. The interplay of environment, water and edaphic factors are equally important in deciding quality traits of 'Basmati' rice.

2. Solar radiation and day length: 'Basmati' rice is a highly photosensitive crop that requires a tropical warm and soggy climate from transplantation to maturity. The climatic requirements for cultivating 'Basmati' rice include prolonged sunshine and a temperature between 20-35 degrees Celsius throughout crop duration, low night temperatures and reduced maintenance respiration. In the 'Basmati' rice growing regions, the day length at a given period in a calendar month are longer than in areas where 'Basmati' rice is not grown. Further, since rice is a "short day" plant, the process of maturity of paddy is further delayed in areas where there are longer days. In areas that experience longer light hours, the maturation of the grain is further delayed. Effectively, on the same given date of a month, the physiological development of a variety of 'Basmati' rice at a place that has longer days will be behind the physiological development of the same variety at a place that has shorter days. It is the interplay of the photoperiod which exposes the growing grains to optimal solar radiation, with other factors such as temperature and humidity in the IGP that enable 'Basmati' rice to accumulate and retain its aromatic compounds and other characteristics. Temperature and solar radiation from July to November are ideal for rice growing in the Geographical Area. From late September onward the temperature drops, days become clearer (increased sunshine hours duration) and milder (25-32°C) and the nights become cooler (20-22°C). Such climatic conditions are ideal for the development of unique 'Basmati' rice fragrance along with other characteristics listed in the specifications.

3. Water availability and quality: In general, irrigation water is canal water coming from rains and/or snow-melt water of the Himalayas. The quality and sufficient availability of water is essential for the cultivation and aroma of 'Basmati' rice. The water depth at the time of transplanting and one week later should be kept low (2.5-3.8cm) and, thereafter, it should be gradually increased to about 5cm for a period of 20 days. About 25-30 days after transplanting, the field should be kept at water saturated level and then re-irrigated after the application of nitrogenous fertilizers. Afterwards, the field should be again kept at well saturated level till grain formation. Watering should be stopped two weeks before harvesting the crop.

4. Soil: The Geographical Area consists of the fertile alluvial plains of the Indus river and the Chenab, the Ravi, the Jhelum and the Sutlej. The different parts of the Geographical Area are therefore characterized by an alluvial soil full of minerals carried by the waters of the Himalayas. These soils are slightly alkaline in reaction (pH = 7.3 to 8.5), deep (>1m), well-drained and generally sandy loam to loam in texture. These soils are generally low (<0.5%) to medium (0.5 to 0.75%) in organic carbon content. The clay fraction of soil is dominated with illite, a mineral rich in potassium. Hence, these soils are well-supplied with potassium (K) as revealed by medium (120 to 280 kg K/ha) to high (>280 kg K/ha) K fertility status.

5. Temperature: Quality traits of 'Basmati' rice are known to be highly influenced by temperature particularly at the time of flowering, grain filling and maturity. Aroma fraction is enhanced at low temperature during grain filling. Basmati requires relatively cooler temperatures during crop maturity for retention of aroma. The temperature during the grain-filling period remains mild (32 degrees Celsius/day and 20 Celsius degrees /night) giving a strong aroma to the grains. The principal chemical constituent of the aroma of 'Basmati' rice is 2-acetyle-1-pyrroline, which is volatile in nature. The maximum retention of the aroma happens when the grain-filling period coincides with mild temperature.

Human factors also play an important role, in particular the aforementioned method of obtaining the product.

Furthermore, 'Basmati' rice grown in all parts of Pakistan's Geographical Area enjoys the same characteristics. These characteristics were agreed by all members of the supply chain and research institutes in Pakistan.

'Basmati' rice that is grown within and outside of Punjab shares equivalent characteristics – and, as a result, a comparable standing and reputation – as the environmental and human factors are analogous in those areas and the approved varieties are cultivated following the same method as set out in these specifications. The biological resources (seed varieties etc.), agricultural practices linked to the landscape and environment, maximum yields and duration of ripening/seasoning, amongst others, contribute to the characteristics, and ensuing reputation, of 'Basmati' rice grown in these regions.

Firstly, the Geographical Area consists of the fertile alluvial plains of the Indus River and the Chenab, the Ravi, the Jhelum and the Sutlej. The environmental factors that contribute to the quality, reputation and other characteristics of 'Basmati' rice apply throughout the Geographical Area. Similar to the Punjab province, the abovementioned districts of the Sindh, KPK, Azad Jammu and Kashmir and Baluchistan provinces, which border the Punjab province, feature a favorable interplay of high humidity, accommodating temperatures and levels of solar radiation, sufficient water supply (coming from rains/snow-melt water of the Himalayas) and fertile soil with a slightly alkaline reaction. The territories from the provinces of Sindh, KPK, Baluchistan and the districts of Azad Jammu and Kashmir that are part of the Geographical Area are contiguous to the province of Punjab; they are irrigated by the Indus River system and are, therefore, characterized by and alluvial soil full of minerals carried by the waters of the Himalayas, that are all suitable for the production of 'Basmati' rice.

The fact that the environmental factors that contribute to the quality and other characteristics of 'Basmati' rice, and hence, to its reputation, apply throughout the entire Geographical Area, is supported by scientific literature as mentioned in Section D above.

Secondly, the existence of a link between the Geographical Area and the quality, reputation or other characteristics of 'Basmati' rice is affirmed by the successful cultivation of 'Basmati' varieties throughout the Geographical Area. These varieties have been successfully grown in the designated areas for a considerable period of time, thereby conforming to the codified product characteristics.

Finally, Trading Corporation of Pakistan, the authority designated under Section 13(1) of Pakistan's 2020 Geographical Indications Act and acting as public authority under Article 37(2)(a) of Regulation (EU) No 1151/2012, verifies that the 'Basmati' rice grown within as well as outside Punjab (including in Sindh) complies with these specifications. Trading Corporation of Pakistan examines and confirms the measurable characteristics (such as chemical composition, shape, taste, color etc.) of rice traceable to all parts of the Geographical Area. It guarantees that the product yields of 'Basmati' rice grown in the Geographical Area mentioned comply with the specifications.

(iv) References

There is an abundance of sources that demonstrate the reputation of 'Basmati' rice among the general public and the food and culinary industry, in Pakistan and abroad, and how this reputation is linked to the name and attributable to the Geographical Area (see above, Section F).

G) NAME AND ADDRESS OF THE AUTHORITIES OR BODIES VERIFYING COMPLIANCE WITH THE PROVISIONS OF THE PRODUCT SPECIFICATIONS AND THEIR TASKS

Since its appointment as the Authority designated under Section 13(1) of the Geographical Indications (Protection and Registration) Act 2020 (Act No. XVIII of 2020) , verification of conformity of 'Basmati' rice with these specifications, in accordance with Article 37(2) of Regulation (EU) No 1151/2012 is the responsibility of:

Trading Corporation of Pakistan (Pvt.) Limited
4th and 5th Floor, Finance & Trade Centre Block-B
Sharhrah-e-Faisal, Karachi-74400
Pakistan

The tasks of this public authority, established and owned by the Ministry of Commerce of Pakistan, have been specified under Section D (ii & iii) above.

H) SPECIFIC PACKAGING AND LABELLING RULES FOR THE PRODUCT

There are currently no compulsory packaging or labeling rules/requirements in place specifically for 'Basmati' rice grown and produced in Pakistan. However, 'Basmati' rice is being sold by the authorized users including all major producers and exporters under their individual brand names.

They follow the packaging and labeling requirements as applicable to food and edible products in Pakistan. For export consignments, the international standards of packaging and labeling have been adopted in accordance with the requirements of the importing country as may be applicable.

Annexure **A**

S.r #	**Address**	**Latitude**	**Longitude**	S.r #	**Address**	**Latitude**	**Longitude**
1	Sialkot	32.494499	74.5228916	26	Bahawalpur	29.3544	71.6911
2	Gujranwala	32.187692	74.1944529	27	Rahim Yar Khan	28.4212	70.2989
3	Hafizabad	32.071186	73.6894718	28	Bahawalnagar	30.0025	73.2412
4	Sheikhupura	31.716662	73.9850243	29	Muzaffargarh	30.0736	71.1805
5	Lahore	31.52037	74.3587473	30	Layyah	30.9693	70.9428
6	Kasur	31.117865	74.4408385	31	D G Khan	30.0489	70.6455
7	Gujrat	32.573073	74.1005044	32	Rajanpur	29.1044	70.3301
8	Mandi Bahauddin	32.574165	73.4828374	33	Shikarpur	27.957	68.638
9	Narowal	32.101407	74.8799518	34	Jacobabad	28.2823	68.4472
10	Faisalabad	31.450366	73.1349605	35	Kashmore	28.4482	69.5857
11	Nankana Sahib	31.449151	73.712479	36	Larkana	27.557	68.2028
12	Chinnot	31.729166	72.9821954	37	Kambar		
13	Jhang	31.278068	72.3316761	38	Shahdadkot	27.8483	67.9106
14	Toba Tek Singh	30.970936	72.4826474	39	Dadu	26.7341	67.7795
15	Sargodha	32.073979	72.6860696	40	Malakand	34.503	71.9046
16	Okara	30.813802	73.4533779	41	Dir	35.1977	71.8749
17	Sahiwal	30.6682	73.111356	42	Swat	35.2227	72.4258
18	Pakpattan	30.35729	73.3826585	43	Naseerabad	31.4872	74.3395
19	Khushab	32.295537	72.3488721	44	Jaffarabad	28.1584	67.882
20	Mianwali	32.583923	71.5370297	45	Sohbatpur	28.5178	68.5437
21	Bhakkar	31.608206	71.0854325	46	Mirpur	33.1486	73.7482
22	Multan	30.157458	71.5249154	47	Bhimber	32.9740	74.0738
23	Lodhran	29.546687	71.6276388	48	Poonch	33.5637	73.9359
24	Khanewal	30.286416	71.9320259	49	Bagh	33.9810	73.7728
25	Vehari	30.044154	72.3440685				