

SURVEY ON BASMATI RICE

This survey was conducted as part of the Agency's food authenticity programme, which aims to gather information about the description of food in the UK.

Summary

- This survey examined different brands of rice labelled as 'Basmati' to provide consumers with information on the non-Basmati rice content, as well as to check the Basmati rice variety where it had been declared. The survey employed a novel DNA test which was developed by the Agency.
- A total of 363 samples were collected from a range of retail outlets and catering suppliers between end November 2002 and end January 2003 by 27 local authorities from across the UK. Loose and pre-packed sample sizes ranged from 125g to 20Kg.
- While 196 (54%) samples were found to contain only Basmati rice, non-Basmati rice was detected, at some level, in 167 (46%) of the samples analysed. 63 (17%) samples had a non-Basmati rice content greater than 20%, with 31 samples (9%) having a reported non-Basmati rice content greater than 60%.
- 68 samples were labelled with the variety of Basmati rice present. In 19 samples the declared variety was found to be the predominant variety present, while in the remaining 49 samples, the declared variety was either not present, or was only a minor component of a mixture of varieties. 18 samples were labelled as 'Super Kernal', which is not an approved varietal name, and could be confusing to consumers as it mentions two individual varieties "Super" and Kernal". The Agency guidance published in February 2003 would not permit the use of this as a varietal name.

- The current GAFTA (Grain and Feed Trade Association) Code of Practice on rice agreed with LACORS allows for the adventitious mixing of other rice in Basmati up to a maximum of 20% for the lowest grade. The Code is currently being revised; the Agency has pressed for a significantly lower figure for adventitious mixing, and for stricter requirements for varietal labelling. If the new proposed level of 7% non-Basmati is agreed, then only 74% of the samples would conform to this.
- All local authorities participating as well as companies' home authorities have been informed of the results. To date, thirteen local authorities have or are taking follow-up action as a result.

Background

Basmati (from the Hindi word for fragrant) is the customary name for certain varieties of rice with unique properties that are grown exclusively in specific areas of the Indo Gangetic Plains of northern India and Pakistan (Annex A). Between them India and Pakistan exported around 270,000 tonnes of Basmati rice into the European Union in 2002/03, with imports to the UK accounting for around 70% of this total. The rice is imported either directly or through millers in the Netherlands, Belgium or France. Around two-thirds of this total comes from India, and the remaining third from Pakistan (Basmati import statistics, EU).

Basmati is a premium long grain rice. Its high value stems from its characteristic aroma in both the raw and cooked state, and the grain is a distinctive shape, which on cooking elongates to almost double its length whilst its width remains the same. In addition to having unique eating qualities, Basmati rice is reported to be a good source of slow releasing carbohydrates (i.e. it has a low glycaemic index compared with other rice).

Basmati rice is a staple food for some ethnic communities in the UK, and is increasingly becoming an important food for the UK as a whole. In recent years sales of Basmati rice have increased by around 12% annually; and are expected to overtake sales of other long grain rice shortly¹. Currently, Basmati rice accounts for around 37% of the dry rice market by value, with a value of £50M per year.

Basmati rice attains a higher price than non-Basmati rice in both wholesale and retail markets. At retail level an average price for non-Basmati rice would be £0.70/Kg

compared with £1.40/Kg for Basmati rice. The deliberate addition of non-Basmati rice to Basmati rice would be expected to offer a significant cost advantage to the supplier and disadvantage to the consumer. In view of the higher price of Basmati, the EC Rice Regime grants a restricted list of certain Basmati rice varieties a refund of Euro 250/ tonne on presentation of certificates of authenticity. Hence in the interest of preventing fraud, only those varieties which are eligible should receive the refund. The Regime has recently been amended to limit the receipt of refund to a more restricted list of varieties, which comes into force after March 2004.

Legislation

There is no specific legislation relating to the labelling of Basmati rice, however in the UK, it is an offence, under Sections 14 and 15 of the Food Safety Act 1990², to sell food that is not of the nature, substance or quality demanded by the consumer or to falsely or misleadingly describe or present food. Basmati would be considered to be a customary name.

The labelling of Basmati rice is also covered by guidance issued by the Food Standards Agency in February 2003, and a current industry Code of Practice.

- The Agency's guidance aims to ensure consumers are not sold rice wrongly labelled as 'Basmati'. It recommends that the term 'Basmati' should only be used to refer to 11 Indian and five Pakistani rice varieties that display typical Basmati properties (Annex B³).
- A Code of Practice for rice (1992)⁴ developed by GAFTA (Grain and Feed Trade Association) in conjunction with LACORS (Local Authorities Co-ordinators of Regulatory Services) currently states that for packs labelled Basmati rice, the inclusion of grains of other varieties (i.e. non-Basmati varieties) should be no more than that specified in the export standards laid down by the Indian and Pakistan Export Agencies. In practice this permits the presence of up to 20% non-Basmati rice in Basmati rice for the lowest grade to allow for unavoidable mixing during harvesting/processing. Following the publication of the Agency's guidance on Basmati, the present GAFTA code on rice is currently being revised, and the allowance for non-Basmati will be reduced considerably, and the controls on varietal labelling will be strengthened. In the interests of meeting consumer's expectations, the Agency has

strongly encouraged industry to agree limits for non-Basmati to as low as is technologically achievable, and a value of 7% has been proposed.

Methodology

(a) Sampling

On the Agency's behalf, Trading Standards and Environmental Health Departments from 27 regions covering the major ethnic centres throughout the UK purchased a total of 363 Basmati rice samples during the period November 2002 to February 2003. A list of participating local authorities is included in Annex C

Figure 1 gives a breakdown of the type of outlet sampled. The majority of samples were collected from small/independent retail outlets, including ethnic stores, because most Basmati rice is sold through outlets of this sort.

To ensure a broadly representative picture of the Basmati rice market, as wide a range as possible of brands and pack sizes was collected (**Figure 2**). Around half of the samples collected were pack sizes between 125g and 1Kg, and the remaining half ranged from 2 Kg to 20Kg. Products representing 96 distinct brand names, originating from 88 brand owners (or retailers in the case of loose samples) were collected during the survey.

Basmati rice can only be grown in specific regions of India and Pakistan. During this survey approximately one-third of samples collected were labelled as from India, one-third from Pakistan, and the final third were not labelled with the country of origin. A small number of samples were labelled as mixed origin (**Figure 3**).

(b) Analytical approach

Samples collected in this survey were analysed by The Centre for Arid Zone Studies (CAZS), University of Wales (Bangor). The analyses comprised both qualitative and quantitative microsatellite-based DNA analysis, and the method is detailed in Annex D. The technique enables identification of the presence of non-Basmati rice in a sample, and determines at what level the non-Basmati rice is present. The method can be used to substantiate varietal claims.

Results

During the course of this survey a total of 363 samples of Basmati rice were collected (**Table 1**). After an initial screen, 167 (46%) of the samples collected were found to contain non-Basmati rice at some level. These samples were then subject to further analysis to quantify the non-Basmati rice content (**Table 2**).

63 samples (17%) were found to contain non-Basmati rice at levels greater than 20%, the current maximum allowed for non-Basmati varieties in Basmati rice under the GAFTA Code of Practice on rice. A significant proportion of the samples (9%) were observed to contain non-Basmati rice at levels greater than 60%.

68 samples were labelled with the specific variety of Basmati rice, of which 19 appeared to comprise mainly the claimed variety. In the remaining 49 samples, the declared variety was either not present, or was only a minor component of a mixture of varieties.

Interpretation and Discussion

Non-Basmati rice was found, at some level, in 46% (167) of the samples collected during this survey. In around 24% of these samples, the non-Basmati rice content was relatively small i.e. less than 10% (and below the limit of measurement in 10% of these samples). However 17% of samples contained non-Basmati rice at levels greater than 20% (Maximum limit for unavoidable mixing under GAFTA Code of Practice for the lowest quality grade). Under a revised code, where a figure of 7% non-Basmati in Basmati rice has been proposed, then 26% (rather than 17%) of samples collected during this survey would be classed as adverse and could not be labelled as Basmati rice.

From the results, there is no evidence to suggest that particular pack sizes are more susceptible to addition of greater than 20% non-Basmati rice. **Table 3** details the breakdown of the 63 samples with greater than 20% non-Basmati rice, and their pack size. With the exception of the 18.1 Kg pack, a similar pattern can be noted regardless of pack sizes, with between 10 and 20% of samples found to contain greater than 20% non-Basmati rice. Sixteen different brand names were represented in the 18 samples with a pack size of 10 Kg or greater.

Agency Guidance on use of the term Basmati rice was published on the FSA web site (www.food.gov.uk), accompanied by a detailed protocol of the methodology available. Basmati rice collected during this survey are likely to have been packed from the 2001 or

2002 harvest. A commercial DNA testing service has only been available since early 2002. Prior to this date suppliers would have had to rely on physico-chemical testing and/or visual inspection with an associated audit trail to verify the authenticity of their product.

Varietal Labelling

Although not required by law, 68 samples displayed a Basmati varietal name (Super and/or Kernal) on their packaging. Analysis found that only 19 of these samples were comprised wholly or mainly of the variety claimed. In the remaining 49, the declared variety was either a minor component of the mixture, or was not present.

The description 'Super Kernal' has been used on the labelling of 18 samples. This name is not an approved varietal name (see Appendix B) and may be confusing to consumers because of the existence of the two individual varieties: Super Basmati and Kernal. Agency Guidance recommends that any voluntary varietal information provided should be presented as "**variety: X**", where X is the variety name, and 'Super Kernal' would not be permitted. Only 12 of the 18 samples labelled as 'Super Kernal' contained either Super (2) or Kernal (10).

The name 'Dehradun' was also used on packaging but only in the context of a geographical indication. Although Dehradun is an approved Basmati varietal name, it is also the name of a region in India (See Annex B). Again the guidance makes clear that when used as a variety name this should be clearly presented to the consumer.

The revised Code of Practice is likely to strengthen the requirements for labelling the variety of Basmati rice present. Only approved varietal names can be used, and if a rice is labelled, for example, as the variety: Kernal, in future it will have to contain at least 90% of the declared variety. In the current survey only 9 of the 68 samples with a varietal claim would meet these requirements.

Follow up Action

Food standards authorities and relevant home authorities have been informed of the results of this survey to enable them to take any follow up action they consider appropriate. The Agency has particularly encouraged enforcement authorities to follow up cases where the level of non-Basmati rice is above that agreed under the GAFTA Code of Practice. To date thirteen local authorities and home authorities informed of samples with

adverse results have taken further action, including formal visits and further sampling. All have indicated to the Agency that they will continue to monitor the situation closely. A number of brand owners have also reaffirmed to the Agency measures they are putting in place to improve practices including tighter controls on their supply chain and ad-hoc DNA testing. All companies found to have adverse results were given advance notice of their results and the opportunity to comment on their results. Comments received from companies and where appropriate, the FSA response are reproduced in Annex E.

The survey has increased awareness of the Agency's guidance and the GAFTA Code of Practice in the Basmati rice Industry, including small retailers. Feedback from the industry suggests that a number of packers and retailers have taken steps to tackle problems that have been identified, for example by changing labels or suppliers.

Conclusions

Nearly half of the Basmati rice sampled during the course of this survey was found to contain non-Basmati rice, with 63 samples (17%) having a non-Basmati rice content greater than 20%. Of most concern were the 31 (9%) samples that were found to have a non-Basmati rice content greater than 60%.

The availability of a robust method to check variety and non-Basmati rice addition, as well as a revision in the export standards for India and Pakistan means that the industry Code of Practice is out of date. The Agency is now working with the main parties involved with the Basmati trade and the enforcement authorities to revise the Code to be more in line with consumer expectations. It will be setting much lower levels of unavoidable adventitious mixing with non-Basmati varieties (7% is proposed), and tighter requirements for varietal and origin labelling.

References

1. Mintel Report November 2001. Rice
2. Food Safety Act 1990. [1990] Ch. 16
3. FSA Guidance on 'Use of the term Basmati rice' (February 2003).
<http://www.food.gov.uk/foodindustry/guidancenotes/labelregsguidance/basmatiguide>
4. GAFTA (Grain and Feed Trade Association) Code of Practice for Rice (1992).
Prepared in conjunction with LACORS (Local Authorities Co-ordinators of Regulatory Services)

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Table 1. Sample details and results of analyses for all samples collected during the survey.

See excel spreadsheet

Table 2. Non-Basmati rice content of samples

% non-Basmati rice	samples	%	
Not Detected (ND)	196	54%	
Present at some level	167	46%	
<limit of measurement (LoM)	33	10	
<10%	50	14	
10-20%	21	6	
20-30%	14	4	Level >
30-40%	9	2	20% = 63
40-50%	5	1	samples
50-60%	4	1	(17%)
>60%	31	9	
Total samples collected	363	100%	

Table 3. Correlation between % non-Basmati rice and pack size

	<20%	20-30%	30-40%	40-50%	50-60%	>60%	Total > 20%	Total collected	% samples with >20% non-Basmati rice
125g	1	1	-	-	-	-	1	2	50.0
375g	2	-	-	-	-	-	-	2	-
500g	91	4	2	2	1	6	15	106	14.2
750g	1	-	-	-	-	-	-	1	-
1 Kg	58	3		2	1	1	7	65	10.8
2 Kg	105	4	7	1	1	15	28	133	21.1
2.27 Kg	1	-	-	-	-	-	-	1	-
3 Kg	4	-	-	-	-	1	1	5	20.0
4 Kg	3	-	-	-	-	-	-	3	-
5 Kg	15	-	-	-	-	4	4	21	19.0
10 Kg	6	-	-	-	-	1	1	7	14.3
18.1 Kg	-	-	-	-	-	2	2	2	100.0
20 Kg	7	1	-	-	1		1	9	22.2
loose	4	1	-	-	-	1	2	6	33.3

Figure 1. Range of outlets samples collected from

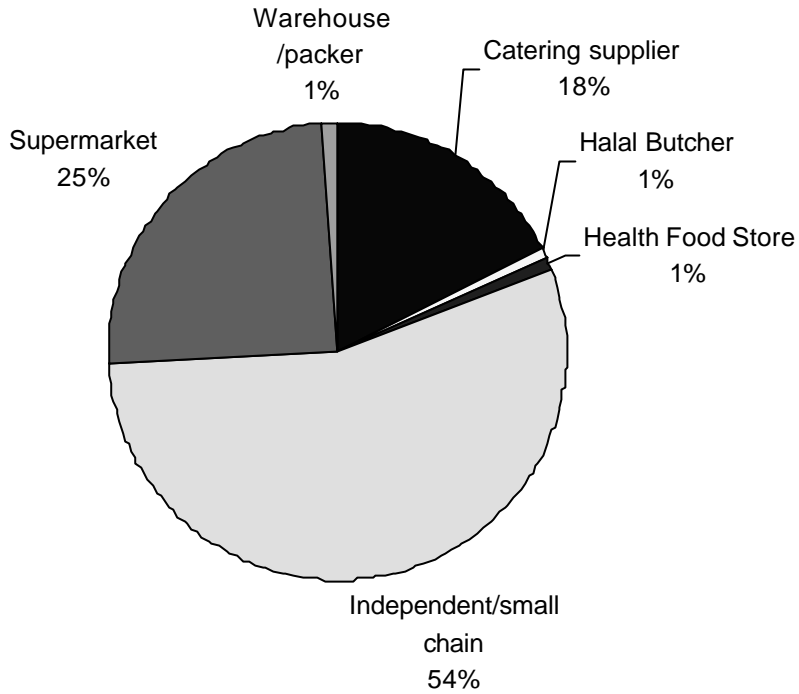


Figure 2. Breakdown of pack sizes collected

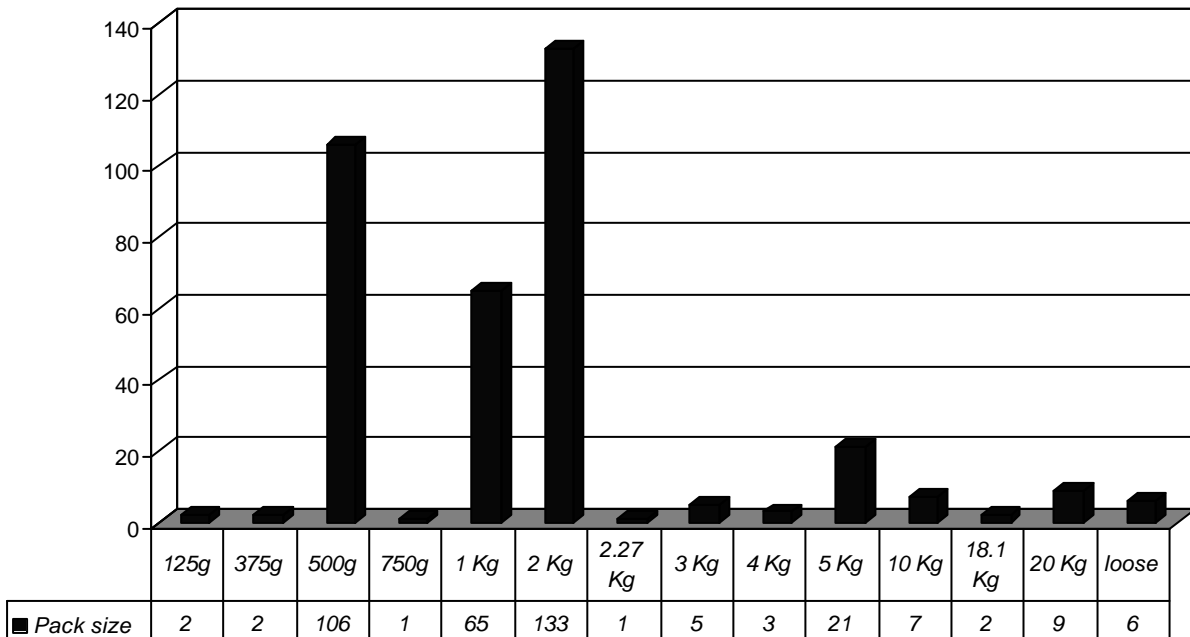
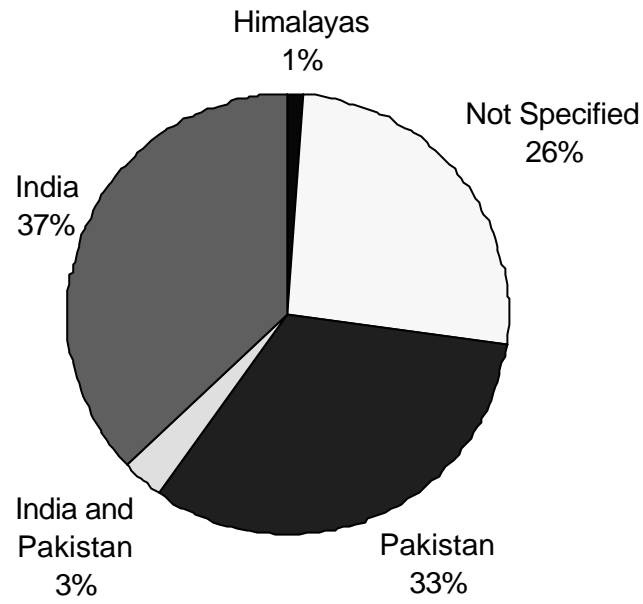
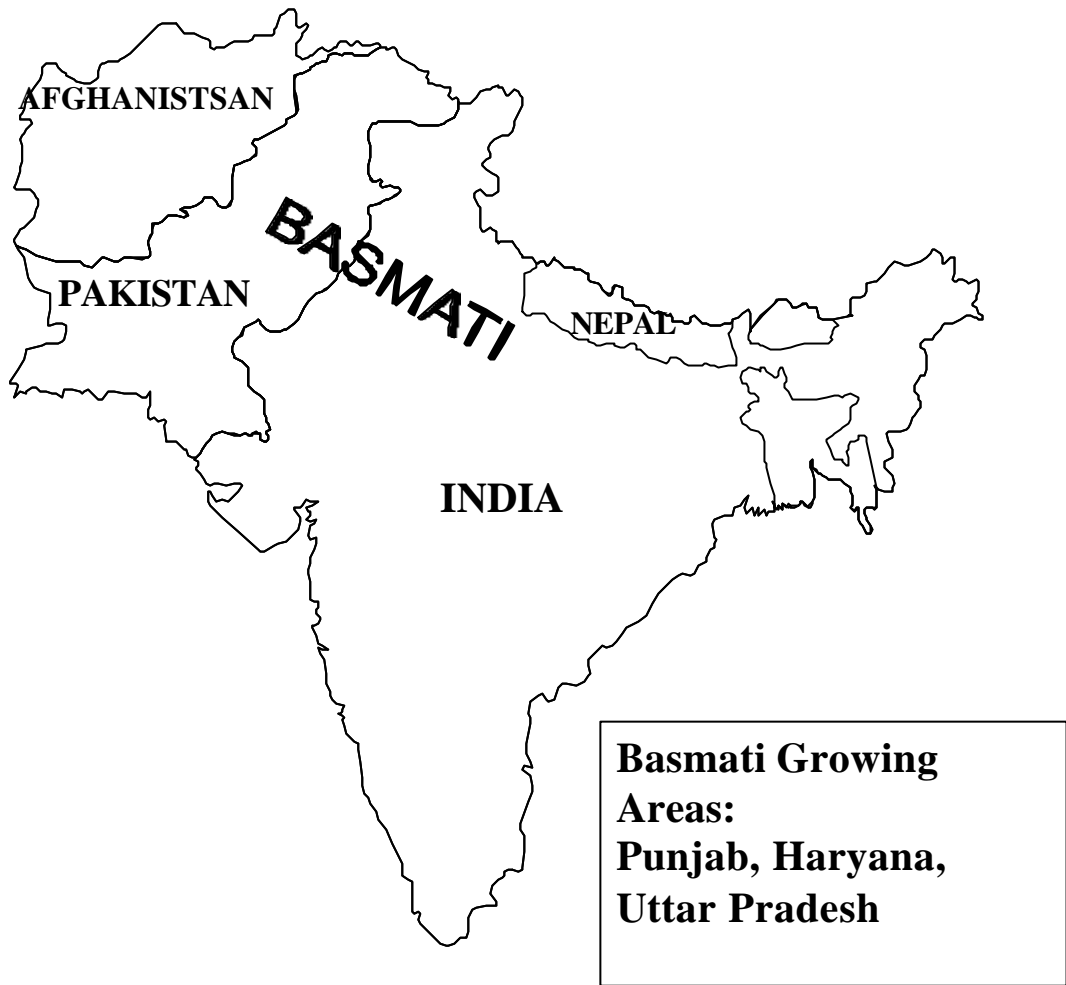


Figure 3. Country of origin of samples collected



Annex A. Growing Area of Basmati rice



Annex B. Agency Guidance on the use of the name "Basmati" rice

Basmati rice is premium long grain rice. Its high value stems from its unique eating qualities. These include having an aroma in both the raw and cooked state. On cooking, the grain elongates only, and the cooked grain has a characteristic shape and integrity. Basmati is the customary name for certain varieties of rice with these unique properties that are grown exclusively in specific areas of the Indo Gangetic Plains, which currently includes the northern part of the Western Punjab (on both sides of the Indian and Pakistani border), Jammu, Haryana State, Uttaranchal, and Western Uttar Pradesh in India.

The following varieties have been approved by the Indian and Pakistani authorities and can use the description "Basmati". They all have at least one parent which is a true-line Basmati variety, and they have been approved on the basis of having the above unique properties as measured by various objective tests such as grain dimension, amylose content, cooking elongation, and aroma.

Indian varieties	Pakistani varieties
<i>Basmati 370</i>	<i>Basmati 370</i>
<i>Dehradun</i> (Type - 3)	<i>Kernel</i> (Basmati Pakistan)
<i>Basmati 217</i>	<i>Super Basmati</i>
<i>Basmati 386</i>	<i>Basmati 385</i>
<i>Taraori</i> (Karnal Local, HBC-19)	<i>Basmati 198</i>
<i>Ranbir Basmati</i> (IET 11348)	
<i>Pusa Basmati</i> (IET 10364)	
<i>Punjab Basmati</i> (Bauni Basmati)	
<i>Haryana Basmati</i> (HKR 228/IET 10367)	
<i>Kasturi</i> (IET 8580)	
<i>Mahi Suganda</i>	

New varieties may be added in future provided they satisfy the same criteria as the existing varieties.

We **recommend** that:

- The name "Basmati" can be used for any of the above varieties.
- The country of origin should also be given, and where there is a mix of origin this information should be given to the consumer.
- Information of the nature of a mixture of Basmati rice with other (non-Basmati) long grain rice should be given to consumer as per the quantitative ingredient declaration (QUID) provisions in the Food Labelling Regulations 1996.
- The specific variety name may be given as voluntary information to the consumer, but in order to avoid confusion the words "**variety: X**" where X is variety name in italics above, should be used.

Annex C. List of Local Authorities Participating in the Survey

Code	Local Authority
BH	Brighton and Hove Council
BK	Buckinghamshire County Council
CV	Coventry City Council
EX	Essex County Council
HP	Hampshire County Council
LC	Leicester City Council
BT	London Borough of Brent
HN	London Borough of Hounslow
MR	London Borough of Merton
WD	London Borough of Wandsworth
WT	London Borough of Westminster
LT	Luton Borough Council
NI	Northern Ireland (Food Liaison Group)
NF	Norfolk County Council
NY	North Yorkshire County Council
NT	Nottinghamshire County Council
OX	Oxfordshire County Council
PT	Peterborough City Council
PO	Portsmouth City Council
SL	Slough Borough Council
SO	Southampton City Council
SU	Surrey County Council
WS	Walsall Metropolitan Borough Council
WB	West Berkshire Council
WL	West Lothian Council
WY	West Yorkshire Trading Standards Service
WO	Wolverhampton Council

Annex D DNA Methodology Used in the Survey

Authentic standards

An authentic collection of standard Basmati and long grain varieties was sourced from India and Pakistan. A total of 10 approved Basmati varieties and 2 non-Basmati varieties (Sherbati and Pakistan 386) were used as reference standards for DNA genotyping with 10 Simple Sequence Repeat (SSR) markers. The two non-Basmati varieties have a superficial appearance of Basmati rice, but do not exhibit the normal Basmati properties, and are regarded as the most likely adulterants of Basmati. The collection of authentic standards used in the survey does not include five varieties contained in the current list of approved varieties (Annex B), it is believed these are either grown in very small quantities or not grown commercially. The absence of these varieties would not be expected to affect the robustness of the quantitative determination of the two non-Basmati varieties, as the allele chosen for these two varieties is quite specific to them and some other non-Basmati varieties. It is not expected that this allele would be present in any of the approved Basmati varieties.

Each sample consisted of at least 500g of rice from which sub-samples were taken and homogenised. From this, duplicate 1g samples were taken for DNA extraction and analysis using an approved analytical protocol. The remaining original rice samples and powdered sub-samples were stored at 4°C for use in any further testing that may be required.

DNA was extracted from the sample using the modified Nucleon Phytopure Plant DNA extraction kit procedure (Tepnel Life Sciences plc, Manchester), and DNA content quantified and adjusted to a standard concentration. The resulting extracts were subjected to PCR (Polymerase Chain Reaction) with rice microsatellite primers to amplify target DNA sequences using an automated 96 well format.

The PCR products were separated using capillary electrophoresis and the resulting patterns analysed. Fragment analysis was carried out using the Beckman Coulter CEQ8000 for automated capillary polyacrylamide gel-electrophoresis with laser detection and fluorescence-labelled primers and Beckman Coulter CEQ8000 software for fragment size estimation and allele scoring. Using this system, fragments that differ by just 2 base pairs can be reliably scored.

Stage One: Qualitative - Ten different primers for SSR loci are used: RM1, RM44, RM55, RM171, RM201, RM202, RM223, RM229, RM241, and M16 (RM348). A list of allele sizes for different rice varieties is given below. Each extract was subjected to PCR to amplify target DNA sequences and resultant allelic profiles compared to those of standard references.

Rice Alleles for Primer Pairs

Summary of ten rice microsatellite markers, indicating the chromosome where the locus is mapped and fragment sizes (bp) of alleles detected. All sizes include an extra 19 bp 'tail' sequence on the forward primer. Primer sequences can be found on the web site:

www.gramene.org

	RM1	RM223	M16 (RM348)	RM202	RM44	RM201	RM229	RM241	RM171	RM55
Chromosome	1	8	4	11	8	9	11	4	10	3
Allele										
Z	127	186	158	206	133	178	145	163	363	253
Y	120	176	150	200, (202)	130	166	141	151	355	248
X	105	174	-	182	126	161	136	147	351	238
W	95	170	-	180	121	175	130	-	343	225
V	88	166	-	-	111	-	-	-	339	229

List of allele codes used for logic testing to distinguish 12 standard varieties. The allele codes relate to the fragment sizes shown above. Alleles detected as second or third highest peaks are shown in brackets.

	RM1	RM223	M16 (RM348)	RM202	RM44	RM201	RM229	RM241	RM171	RM55
Taraori	W	W	Z	Y	Y	X	Y	Y	Y	X
Basmati 386	W	W	Z	Y	Y	X	Y	Y	Y	X
Basmati 385	Y	W	Z	X	Y	X	Y	Z	Y	Z
Basmati 370	W	W	Z	Y	X	X	Y	Z	Y	Z
Basmati 198	Y	W	Z	X (Y)	X	X	Y	Z	Y	Z
Dehradun	W	W	Z	Y	X	X	Y	Z	Y	Z
Kasturi	W	V	Y	Y	W	X	Y	Z	Z	Y
Kernal	W	W	Z	Y	Y	X	Y	Y	Y	X
Super Basmati	W	W	Z	Y	X	X	Y	Z	z	X
Pusa Basmati	W	W	Y	Y	Y	X	X	Y	Z	Y
Sherbati	W (Z)	Z (Y)	Y	X (Y)	W	Z	X	X (Y)	W (Z, Y)	Y
Pak 386	Y	X	Y	Y	W	Z	Y	Y	Z	Y

The uncertainty bounds for individual products samples in the survey depends on the pooled between variance (8.97) and the maximum squared bias (5.76), and the number of extracts (n) for the product (either 2 or 3 depending on the product) according to the formula:

$$\text{Uncertainty} = \sqrt{[\text{Square Bias}] + \left(\frac{\text{Variance}}{n}\right)}$$

For 2 extracts the uncertainty is 6.4%

For 3 extracts the uncertainty is 5.9%

The upper and lower bounds of percentage non-Basmati rice at a 95% confidence level were calculated and the lower value used to classify sample results within percentage non-Basmati rice bands. Samples have therefore been given the full benefit of the uncertainty.

For example, where a sample was found to have a mean level of non-Basmati rice of 24% (using 2 extracts), by applying the uncertainty (6.4%) the lower level for this sample would be 18% and the upper level 30%. The results for this sample would be published as containing 10-20% non-Basmati rice, because this is the band in which the lower level falls.

Quality Assurance

Each sample was given a unique identifying code and sent directly to the laboratory by the relevant collection officer. Upon receipt of samples a description of each sample was recorded along with the corresponding identification code. Samples were handled and homogenised at a field station away from the laboratory used for PCR. Appropriate control reactions were included at each stage - standards and blanks. Internal size standards were used on each plate.

The laboratory has retained all samples and packaging (fully identified with code numbers etc.) until instructed otherwise by the Food Standards Agency, so that any necessary re-tests can be conducted if requested.

Annex E. Written Comments Received From Companies

NB The comments listed in this Annex were received by the Food Standards Agency in response to notification of their individual results from the companies concerned and reflect their views.

Statement From	Sample code(s)	Comment	Agency Response
3663	WD417	<p>3663 were both concerned and disappointed to learn of the results obtained by the FSA's Rice Authenticity Survey. 3663 and their suppliers adhere to a strict Quality Management System:</p> <ul style="list-style-type: none"> • Holding of detailed product specifications stating only Basmati rice species are used. • Raw material supplier checks supported by certificate of authenticity issued by the country of origin. • Numerous supplier visits by the professionally qualified 3663 food technologist. • Laboratory analysis on numerous occasions including adulteration testing • Frequent product tasting and quality reviews <p>All 3663 Basmati Rice products are DNA tested for adulteration. The Basmati Rice supplied to 3663 was analytically tested in January and March 2003 and all results confirmed 100% presence of Basmati Rice grains (Pusa and Taraori).</p> <p>3663 are unable to explain the FSA results despite this survey being the first occasion this new test was used and the alleged lack of some authenticate varietal reference marker samples.</p> <p>Following notification of the FSA results 3663 carried out further adulteration tests outside of the Quality Management System requirements and the samples were again found to contain 100% Basmati rice grains.</p>	<p>The absence of two authentic Basmati rice varieties would not be expected to affect the quantitative determination of non-Basmati rice in Basmati rice. This is because the allele chosen to base the quantitative determination is very specific to non-Basmati varieties</p>

Booker Cash & Carry Ltd	BH 537 BK 276 CV 029 EX 023 LT 426 NF 216 NT 134 PO 547 WB 152 WD 415	<p>The FSA samples were taken almost a year ago and so they only have limited relevance to rice that is currently stocked.</p> <p>Booker carried out it's own investigations and independent testing of it's Happy Shopper and Chef's Larder Basmati Rice.</p> <p>The independent laboratory reported that of five more recent batches they were "Pure Line Basmati ...in accordance with the Food Standards Agency guidelines, 2003" and two contained "less than 10%" non-Basmati grains.</p> <p>Taken as a whole the level of non-Basmati grains found across the FSA's ten samples is 5.4%. Adding Booker's independent test results the overall level falls to 4%.</p> <p>Both of these figures are well within the 10% tolerance set for Grade A Basmati Rice by The Grain and Feed Association in conjunction with The Local Authorities Co-ordinating Body on Regulatory Services. This tolerance exists in recognition of the fragmented nature of supply in the countries of origin, which lead to difficulties with segregation during processing and transportation.</p> <p>Booker is pleased that the results of this survey demonstrate that it's efforts to provide customers with honestly labelled Basmati Rice products are effective and that the products are consistent with the best standards currently achievable.</p> <p>Booker will continue to work closely with its suppliers to push these standards higher.</p>	
Centura Foods (for	NI 636	<p>The rice in question was supplied to our sister company RHM Ireland, with an Indian Government Certificate of Authenticity stating it was Basmati rice.</p>	

<p>Sharwoods and RHM Ireland)</p>		<p>It had been milled from brown rice to white in February 2002, having been received by the supplier during Oct 2001, from the 2000 crop year. DNA testing was not then commercially available so the authorities were not able to fully test the goods.</p> <p>Centura Foods, which owns the Sharwood's brand, had discontinued sale of this item in the UK in early 2002, and it was subsequent to this that remaining stocks were supplied to RHM Ireland, still carrying the Sharwood's name with Centura Foods' now defunct address.</p> <p>We had no reason to suspect that our reputable supplier would do otherwise than supply authentic Basmati rice. We believe it was supplied in good faith against our specification, supported by official certificates of authenticity.</p> <p>Finally, while Centura Foods has discontinued this product from its range, RHM Ireland now obtains its authorised stock from a different supplier.</p>	
<p>East End Foods</p>	<p>CV 013 CV 027 LT 429 NT 139 OX 234 PT 113 WO 651</p>	<p>I feel that this is one of the best projects FSA have undertaken. I congratulate you on banning Pusa and Sharbati varieties under the definition of Basmati Rice, as the unethical operators in the EU took the end user for a ride for a long time. This applied more so to the mainstream population who spend extra money, only to find the aroma and flavour we boast that basmati should have, is missing. The retailers of the UK have been specifying non basmati varieties be labelled as Basmati and profiting over 125%. However, I am very happy that you wish to put an end to this.</p> <p>Now, coming to the comments on our own brands - "East End" and "Ruby". I would like to add that:</p> <p>"East End" having been in business for the last 32 years having been concentrating on quality. I am pleased that our brands have been found not to contain adulterated grains*. We shall continue to work on product quality. We feel that is the only credible way to run our business.</p>	<p>The Agency's guidance on the labelling of Basmati rice can be found in Annex B. According to the Guidance the term 'Basmati rice' can be used to describe the 15 listed varieties, which include Pusa but not the common non-Basmati adulterants Sherbati or Pak 386.</p> <p>* outside the GAFTA Code of Practice allowance.</p>

		<p>As I am passionate about food, I concentrate on the concept of ‘From the field to the plate’. Right from the stage of planting Basmati in the fields, it is a natural phenomenon that the seeds of some other rice varieties which may not strictly be classified as Basmati are mixed with the seeds of Basmati and they will also grow with Basmati rice. It is well known that an admixture of non-Basmati varieties between 4 to 7% can be found on harvest. One can do absolutely nothing about this. You will see that on harvest the fundamental flavour, aroma and cooking values will remain unaffected.</p> <p>We have credible suppliers who work closely with the farmers. On our instruction we encourage them to use farmer who can work with us on Contract Growing basis. I find this works well. The farmer is guaranteed his returns and our quality remains intact. This way we have also been able to control the pesticide residues.</p>	
Enjoy Organic Company	NY 092 PT 109	<p>Enjoy Organic Basmati Rice is purchased by our supplier against an Official Government Certificate of Authenticity (India & Pakistan). Any small departure from the level of purity, as indicated by this sampling exercise, would appear to have occurred within expected levels consistent with possible mixing with other rice varieties at source in the country of origin.</p> <p>The purchasing of rice is now supported by a sampling regime using latest DNA testing procedures.</p> <p>All Enjoy Organic rice is purchased and subsequently offered for sale, in good faith.</p>	
KTC (Edibles) Ltd	PO 551	<p>This product was milled by our supplier and identified by them as KTC Kernal Basmati rice. The relevant documentation and that of the original purchase of rice again demonstrates that these goods were</p>	

		<p>purchased and attested to be 100% Basmati rice. There is no indication at any stage by any party that this product contained non Basmati long grain rice.</p> <p>Our company takes the authenticity of it's products most seriously. Further investigations are being made into this issue.</p>	
Lidl UK GmbH	BH 531 MR 253 SU 610 WB 148	<p>Lidl has an extensive food-sampling programme to ensure conformity of our food products to our Buying Conditions. Issues such as adulteration would be highlighted during this routine sampling. Basmati rice was sampled by our nominated external accredited laboratory earlier this year and found to contain only authentic Basmati rice. However, in light of your findings Lidl has arranged to have further analysis of the product carried out.</p> <p>In it not in our interest to mislead our customers or allow our suppliers to adulterate products. Therefore Lidl has taken the results of your survey most seriously and is in the process of fully investigating the allegations made.</p>	
Makro Self service Wholesalers Limited	NI 639 NI 640	<p>Our comments are a response from Makro's supplier, Westmill Foods:</p> <p>I would like to assure you that Westmill Foods and our supply chain, are aware of and are working towards the GAFTA Code of Practice on Basmati, the most recent version of which was circulated in November 2003. Our understanding is that this Code of Practice, and the corresponding list of approved Basmati varieties, remains a draft proposal, which enjoys our full support. The minimum specifications are defined in table 2 of this document, which covers 3 classes of Basmati with maximum permitted content of other rice grains of 5%, 8% & 15% respectively (Note: There is some debate as to whether the lowest class (15% admixture) should be removed).</p> <p>Over recent years, and particularly in the last 12 months, Westmill has invested significantly to improve our ability to prevent</p>	

		<p>contamination. In particular, we have been monitoring the authenticity of Basmati rice we purchase, indeed, we have been benchmarking results obtained by a number of laboratories to ensure the results achieved are consistent (amongst these are CSL and SGS). Results achieved to date, indicate that, generally speaking, a purity level of around 95% is consistently achieved.</p> <p>Based on the confidence given by results obtained to date, we are currently drawing up a schedule of testing for the coming harvest year.</p>	
Nisa Today's (Holdings) Ltd	BH 530 EX 024 NI 643 WL 048 WO 656	<p>In conjunction with our supplier of this product we have carried out extensive traceability studies on the codes of products which you claim contain significant proportions of non-Basmati long grain rice. I have myself examined all the "certificates of authenticity of Basmati Rice for export to the European Community" relating to the product codes in question and all are in order. Silos at [the supplier] are dedicated silos so I am unable to understand the results obtained.</p> <p>I am unable to make further comment on this matter at the present time as all the evidence I can find points to the products being authentic Basmati Rice.</p>	
Sema foods Ltd	NT 135	<p>First of all I would like to thank the Food Standards Agencies surveys which made us aware that the Basmati rice we are selling contains some non-Basmati long grain rice. We are a Turkish Food wholesaler and in our community we don't eat Basmati rice. Thank you very much for informing us with this matter, we will be selective when we are going to buy Basmati rice from now on.</p>	
Somerfield Stores Ltd	BT 199 WS 176 WS 177 WS 178	<p>Based on our investigation and the response from our supplier we are satisfied that we have done all that is possible to ensure that our Basmati Rice is authentic and has not been adulterated. We are also satisfied that our supplier has followed due diligence in assuring Basmati authenticity.</p>	<p>The FSA is confident of the robustness of the DNA testing method employed in the survey.</p>

		<p>During production the Indian authorities take samples to ensure the authenticity of Basmati rice.</p> <p>Upon receipt at our supplier's facilities they send samples from every delivery to an independent testing facility, for verification of the authenticity of the Basmati rice.</p> <p>On arrival in the EU rice is also subjected to random customs testing for authenticity.</p> <p>None of these testing regimes has raised a problem with authenticity.</p> <p>Our supplier has expressed their concern, as has the Rice Association, over the method of testing, which is not yet approved by all authorities. We believe that the approved Basmati DNA reference samples were only given out by the Indian and Pakistani authorities after the testing was done so that the methodology is subject to question.</p>	<p>The FSA obtained authenticated Basmati rice from official sources in India and Pakistan. The Indian authorities supplied many of their approved varieties in sufficient time for us to check that the markers we were using were correct. Pakistan supplied authentic standards several years ago.</p>
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<p>Surya Foods (Brand Laila)</p>	<p>BH 527 BK 280 CV 016 CV 024 CV 030 HN 487 PO 549 S0573 SU 613 WO 654</p>	<p>The Brown rice imported from Pakistan is called “SUPER KERNAL BASMATI BROWN RICE” by the supplier. The Certificate of Authenticity is issued for every consignment and is issued by – TRADING CORPORATION OF PAKISTAN which also describes the rice as “SUPER KERNAL BASMATI BROWN RICE”.</p> <p>It is important that the varietal claim is harmonised for this variety between the FOOD STANDARDS AGENCY in UK and the TRADING CORPORATION OF PAKISTAN in order to eliminate the ambiguity.</p> <p>Whilst we appreciate the steps taken to eradicate and if not at least to minimise the level of adulteration of Basmati rice with non-Basmati rice, it is imperative that the standards acceptable between the Food Standards Agency and their counterparts in the countries of origin must be determined.</p> <p>It appears that what is acceptable and allowed to be exported in the country of origin using traditional methods for identifying the non-Basmati is different and qualified using the experimental method and determines the level of conformity with the non-existent Agency guidance until the circulation of the results of the Survey. Moreover, the samples bearing the same batch codes show different results in the Results Table for Basmati Rice Authenticity Survey.</p>	<p>The Agency believes the use of the terminology “Super Kernal” could be confusing to consumers as Super Basmati and Kernal are two individual varieties in their own right. The Agency’s guidance on the use of the term Basmati recommends that for clarity that voluntary varietal information is given in the form of “variety X” where X is the variety. Samples with the same batch code were reported as ND (not detected) or <10%. Results reported as ND refer to the results of the initial and less sensitive screen prior to quantification of non-Basmati rice. Only those samples with measurable levels of long grain rice were subject to the second quantification step. In this case it is likely that the level of non-Basmati rice present in that batch was around the limit of measurement for the assay.</p>
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Spar	EX 025 PO 560 SU 617 WL 050	The Spar supplier is a long-standing one of good name and reputation, and we wish to ensure that deliberate and “blatant” adulteration is eliminated. The supplier has expressed initial surprise that of four samples, all of the same production batch code (L2312A 865), two were found to be free of non Basmati rice while two were found to have some present. Of those two the higher level was classified as 10-20% “adulterant”. This appears to fall within the GAFTA 20% threshold.	Repeat analysis of the four samples with the same batch code has confirmed the original findings.
The Co-operative Group	HP 447 LC 298 LC 303 LC 310 NI 644 PO 559 SL 326 SO 575	The Co-operative Group was naturally concerned with the findings of the FSA survey. However, we are encouraged that this survey replicated the results of the sampling carried out by ourselves which resulted in the removal from sale in January 2003 of all pack sizes of Basmati Rice which did not comply with our agreed specification. Following the identification of the problem, a full audit of the supply chain was commissioned with the aim of identifying any points of weakness where the contamination could have occurred, particularly in the primary agricultural supply chain, putting additional procedures in place as required.	
Waitrose	BK 285 BK 286 BK 287 WB 162 WB 163 WB 164	<p>At Waitrose we take the authenticity of all our products very seriously and work closely with our suppliers to achieve this important objective.</p> <p>Typical of all our Basmati rice consignments the batch in question was accompanied by official Government certificates of authenticity. In addition we make regular checks using a carefully selected independent laboratory using the best techniques available. Results on this batch showed it to be true-line Basmati rice in accordance with the Food Standards Agency guidelines. It is worth noting that the components of this batch were the same as sample WB162 where no admixture was detected in the survey.</p> <p>The published level of less than 10% is based upon an alleged low</p>	<10% non-Basmati rice was reported in this sample. The method used in this survey is likely to be more sensitive than those employed elsewhere. This could account for the absence of non-Basmati rice in the recent batch of rice tested by Waitrose.

		<p>amount of admixture which, if correct, does not indicate deliberate adulteration but rather accidental addition of indigenous local rice at source which, whilst best efforts are made, can be hard to avoid. This is recognised by responsible trade bodies such as the Grain and Feed Trade Association (GAFTA) and the published level is within their recognised trade Codes of Practice which we require our supplier to abide by.</p> <p>We will continue to monitor through random spot-checking and work with our supplier to ensure the source and quality remain what our customers expect.</p>	
Westmill Foods	BH 535 BT 201 CV 023 CV 028 EX 027 LC 295 LC 299 MR 260 NF 221 NI 638 NT 127 OX 245 PO 561 PO 563 PO 566 SO 568 SU 616 SU 618 WB 157 WB 158 WD 416 WO 653	<p>As a responsible food manufacturer, Westmill Foods purchases all Basmati Rice against an Official Government Certificate of Authenticity, clearly identifying the rice as Basmati and establishing that it is purchased in good faith.</p> <p>We are continuously improving our ability to implement control measures up the supply chain, commissioning our own, independently verified, laboratory checks on the rice, prior to shipment. This approach gives us confidence in our supply chain and has been successfully used to demonstrate the current systems are effective.</p> <p>We welcome the commercial availability of the DNA test and the opportunities it presents to further control and monitor the supply chain. However this technique was not available to us at the time the survey samples were procured.</p> <p>Since DNA testing of Basmati rice has been made commercially available, we have been using this new tool to monitor our supply base. In all instances, the results of this testing indicate that we are meeting the requirements of the GAFTA Code of Practice (which is currently the voluntary code which is adopted by the rice industry and trading standards authorities).</p>	

	WY 070 EX 028 WL 044	Whilst we support the FSA in its endeavours to ensure the consumer is not misled by inappropriate/inaccurate labelling, these results must be viewed in the correct context, as outlined. In addition, recent industry improvements have been presented.	
Wm Morrison Supermarkets plc	CV 005 CV 006 CV 007 CV 008 WY 064 WY 065	Morrison's Basmati rice is procured and packed by approved suppliers who have in place robust testing and traceability procedures and we are confident of its authenticity. These suppliers, along with other organisations within the rice industry, have serious reservations about the analytical techniques used in this survey and we await the outcome of their discussions with the Food Standards Agency.	The FSA is confident in the robustness of the DNA testing method employed in the survey and has full confidence in the results obtained.