

## WHERE IS BASMATI RICE COMING FROM? A GLOBAL TRADE-RELATED OVERVIEW

### **Authors**

Prof. Georges GIRAUD, Agro food marketing, Enita Clermont, France, [giraud@enitac.fr](mailto:giraud@enitac.fr)

Dr. Syed Wajid H. PIRZADA, Chief Scientist, Pakistan Agricultural Research Council,  
[wto\\_chief@yahoo.com](mailto:wto_chief@yahoo.com)

*Contributed Paper prepared for presentation at the International Association of  
Agricultural Economists Conference, Beijing, China, August 16-22, 2009*

*Copyright 2009 by G. Giraud and S.W. H. Pirzada. All rights reserved. Readers may make  
verbatim copies of this document for non-commercial purposes by any means, provided that  
this copyright notice appears on all such copies.*

## **WHERE IS BASMATI RICE COMING FROM? A GLOBAL TRADE-RELATED OVERVIEW**

### **Abstract**

Rice contributes on 20% towards human calorie intake of the world population and 30% of Asian population. Worldwide paddy rice crop was 668 million tonnes in 2008, while rice trade during the year was 30 million tonnes. Trade represents 7% of overall rice cropping. Basmati rice export counts for high value and low volume. Although Basmati crop is primarily from two countries, specific data related to Basmati export are scarce. Basmati trade constituted 8.3% of rice world trade during 2008, with a record of 2.45 million tonnes. Recent volatility of prices affects rice trade market, but less Basmati price that is still the highest on world rice market. This paper depicts the present situation of Basmati trade and its business prospects as a tradable commodity by analysing recent data. Basmati is now a trade-oriented commodity and its price premium attracts number of stakeholders, even when they are far from the original area of cropping. Hence a clarification of areas sown and seeds lines variety might enhance authenticity of Basmati and would allow to improve reliability of Basmati supply chain actors as well. This will act in favour of a more sustainable market for Basmati as a Geographical Indication.

### **Keywords**

Basmati rice, World trade, Origin

**JEL : Q13, Q17**

## **WHERE IS BASMATI RICE COMING FROM? A GLOBAL TRADE-RELATED OVERVIEW**

### **INTEREST AND IMPORTANCE**

Rice is staple food for at least 62.8% of planet inhabitants and it contributes on an average 20% of apparent caloric intake of the world population and 30 % of population in Asia. This contribution varies from 29.5% for China to 72.0% for Bangladesh (Calpe and Prakash, 2007). Worldwide paddy rice crop is foreseen to be 667.7 million tonnes by FAO in 2008. Rice global trade is usually low and counts for 7% of worldwide paddy crop (Calpe, 2005). Rice global trade is estimated, on a milled basis, at 29.6 million tonnes by USDA and 30.2 million tonnes by FAO for 2008 (Childs, 2007; FAO, 2008). While rice trade is low, varying around 6% of overall rice cropping, Basmati rice export counts for high value and low volume. However, specific data related to Basmati export are scarce, although it comes primarily from only two countries: India and Pakistan (Chaudary et al., 2003). Basmati trade increased from 5.2% to 8.3% of all rice world trade from 2003 to 2008, with a record of 2.45 million tonnes on milled basis. Recent increase and fall of agricultural commodities' prices affects rice trade market, but Basmati price did not drop after spring 2008 increase and is still the highest on world rice market (FAO, 2008). Currently, Basmati rice accounts for around 38% of the dry rice market oriented towards direct food consumption, while the main market for coarse rice varieties is its use, through transformation process, in the food & beverage and the pharmaceutical industries.

Basmati is premium long grain rice. Its high value comes 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 generally identified by three main factors: appearance, aroma and taste. Basmati rice is characterised by superfine

grain, pleasant aroma, soft texture and extreme grain elongation with least breadth-wise swelling on cooking. The Basmati rice has traditionally been grown in the north and north-western part of the Indian sub-continent for centuries. Basmati grows better and produces the best quality grains under warm, humid, valley-like conditions.

## **MATERIAL AND METHOD**

This paper intends to depict the present situation of Basmati trade and its business prospects by presenting recent original data available of February 2009 sourced from several databanks and contrasting it with previous analyses published earlier on.

Data is sourced primarily from the directorate Trade and Markets from FAO, USDA in USA, DG Agriculture in EU, Ministry of Commerce, and to some extent from Ministry of Agriculture, in Pakistan and India. Due to great variety of rice formats, the comparison of price/weight ratio is meaningless when data on paddy, brown, husked, milled, parboiled and broken rice are available. Due to the overall harvesting, processing and packaging stages along the supply chain, rice's loss in weight varies from 10% to 37% according to variety, cropping area and kind of machinery (Bhattacharjee et al., 2002).

Calendar year for recording rice campaign is from April to March in India, July to June in Pakistan, September to August in European Union and August to July in USA. For EU, import rice data are available in tons for husked Basmati, for USA they are in metric tons milled basis and prices are in USD on rough rice basis.

In Pakistan, export's breakdown of Basmati vs other rice is shown in value and volume, while data of production are available in volume and acreage at district level by rice variety. In India, data are sparsely available, mainly displayed in value when difference between Basmati and non-Basmati is done. Data on production and acreage are available at state level without any detail on variety.

Finally, data on Basmati rice are mainly provided by trade sources, while agricultural ministries were supposed to have such database. Overall Basmati production, for both export and domestic consumption, is still unknown as crop data from India are not available. Large variability in rice varieties is not helpful in order to get an accurate monitoring of Basmati production. The question is how far a hybrid can be crossbred to be still qualified as belonging to the Basmati family due to several crossbreeding? What is the significant lineage from pure lines for Basmati hybrids: 70%, 50%, 10%, 5%, or 1%? No scientific evidence is published on this, whereas some trade stakeholders are likely to be prone to label as Basmati any kind of hybrid with at least one remote lineage with Basmati (Independent Bangladesh, 2008). Growers and relevant stakeholders, from and close to the region of origin, are more rooted to traditional pure lines.

## **RESULTS**

### **Basmati rice cropping**

The delimitation of ancient Punjab was rather clear before the partition done in 1947 by the Authorities of the British Empire for the independence of India and Pakistan. Old Punjab is likely to include present western Punjab in Pakistan, eastern Punjab and Haryana in India. Most districts of these regions are reported to be the Basmati belt. All these regions are located in Himalayan foothills and constitute the home of Basmati, with peculiar pedo-climatic conditions and specific knowledge on traditional cropping of Basmati rice (Giraud, 2008). For example, cropping in districts Sialkot, Sheikupura, Gujranwala in Pakistan and Kurukshetra, Amritsar in India, is known for giving high quality and aroma to Basmati.

In western Punjab, which represents 91.2% of all Pakistan Basmati crops, Basmati acreage increased by 39.7% in ten years, yield increased by 32.8%. However, Basmati yield is still low with 1721 kg/ha in 2006 in western Punjab, compared to 2116 kg/ha for all rice produced

in Pakistan, and 3858 kg/ha in eastern Punjab and 3051 kg/ha in Haryana, which are the major Basmati providing regions in India. As cropping area is stabilized into the studied countries, increase of Basmati production depends on yield improvement, substitution of Basmati instead of coarse rice crops, and improvement in milling process to a minor extent. Basmati represented 61.6% of rice acreage and 50.3% of production in Pakistan in 2007. According to Mushtaq and Dawson, Basmati rice acreage in Pakistan is not responsive to price shocks but more sensitive to variation in irrigated area (Mushtaq and Dawson, 2002).

While agricultural education towards farmers is still in progress in order to help them to use best practices in rice growing, yield improvement mainly vary according to genetic selection and crossbreeding.

<b>Basmati - related characters according to variety</b>						
<b>Variety</b>	<b>Year of release</b>	<b>Yield, T/ha</b>	<b>Tall, cm</b>	<b>Maturity, days</b>	<b>Aroma</b>	<b>Grain length, mm</b>
Basmati 370	1933	2.5	170	120	++	6.76
Basmati Pak	1968	2.0	170	120	+	7.5
Basmati 385	1988	4.0	133	112	+	6.8
Super Basmati	1996	3.2	115	120	+	7.5
Basmati-2000	2001	4.5	135	115	+	7.7
Kashmir Basmati	1977	4.4	160	90	+	6.6
Rachna Basmati	1999	4.2	135	95	+	6.8
Shaheen Basmati	2000	4.5	134	120	+	7.2
Haryana Basmati		4.50	116	143	-	6.74
Kasturi Basmati	1989	4.0	102	125	-	6.94
Pusa 1	1989	4.50	90	135	-	6.82

Sources: Bashir, 2007 ; Bhattacharjee, 2002

Researchers are working hard in order to help at improving Basmati yields and spreading crop areas (Singh et al., 2006; Bashir et al., 2007; Abedullah, 2007). However, end-use characteristics are related to the growing place. The same seeds do not provide the same final

traits according to variation in planting location. Hence the trade-off is between yield improvement and pure lineage in Basmati parentage for new varieties.

### **Rice, a sensitive and special foodstuff**

Rice is recognized as a sensitive and special product by some countries (Calpe and Prakash, 2007). It means that Governments are able to control, and sometimes stop, the rice trade throughout specific taxes, governmental distribution agencies and price regulation. This exception regime is said to be leading to a more safe food security system providing rice at a low price for local population in developing countries. Despite its second position as rice exporter, Vietnam banned commercial exporters from making sales for several months in 2008 (Childs, 2008). Egypt, India and Bangladesh did the same. Basmati was not included in this ban period. According to FAO, the share of export represents 48.0% of overall 2008 production for Thailand, the first rice exporter, 54.0% for Pakistan, 55.2% for USA, 18.8% for Viet Nam, 2.4% for India and 1.2% for China (FAO, 2008). Although related to the diverse varieties' fitting with consumers' preferences, these percentages indicate various orientations towards trade market.

This process does not affect directly Basmati market (Childs and Kiawu, 2009). However, the authorities from India and Pakistan pay attention to rice availability for their own inhabitants. In 2008, India applied a minimum export price (MEP) of USD 1200 per ton, plus a cess of USD 180 on Basmati rice exports (FAO, 2009). Pakistan applied a MEP of USD 1300 per ton for Basmati rice, and USD 1500 for super Basmati, from January to August.

### **Major importers**

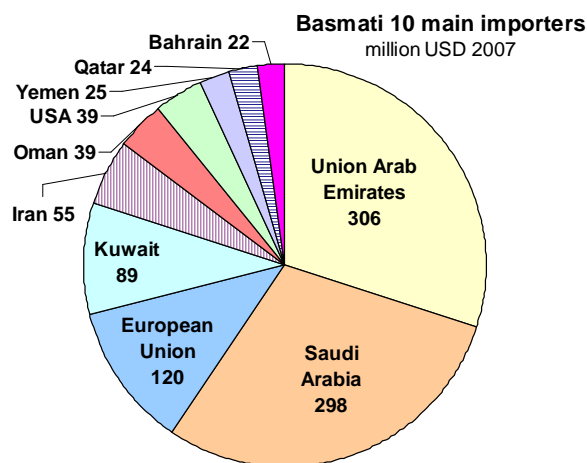
Trade in coarse rice is spread in several countries, mainly located in Asia, with five first importers making 25% of overall rice trade in 2007. Basmati trade is rather concentrated. In 2007, the first five clients of India have a share of 84.9% and those of Pakistan 68.5% of

respective Basmati export (India: 616.7 million USD; Pakistan: 556 million USD). India mainly exports Basmati to Saudi Arabia, European Union, Kuwait, Union of Arab Emirates and USA, whereas Pakistan does the same with Union of Arab Emirates, Iran, Oman, European Union and Yemen.

<b>Basmati export</b>						
<b>Quantity</b> 1000 tons	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
India	708.8	771.5	1 163.0	1 166.6	1 045.7	1 183.4
Pakistan	716.7	816.3	814.9	839.0	907.9	1 271.4
<b>Value</b> million USD						
India	415.8	433.7	628.5	687.3	616.7	1 079.1
Pakistan	267.7	308.4	439.2	479.6	556.3	1 068.9

Source: authors from Databanks

Basmati trade is also concentrated by demand side. The five first importers made 44.5% of overall market in 2007. Main importers are almost all located in the Middle East, although European Union is the third importer.



Source: authors from Databanks

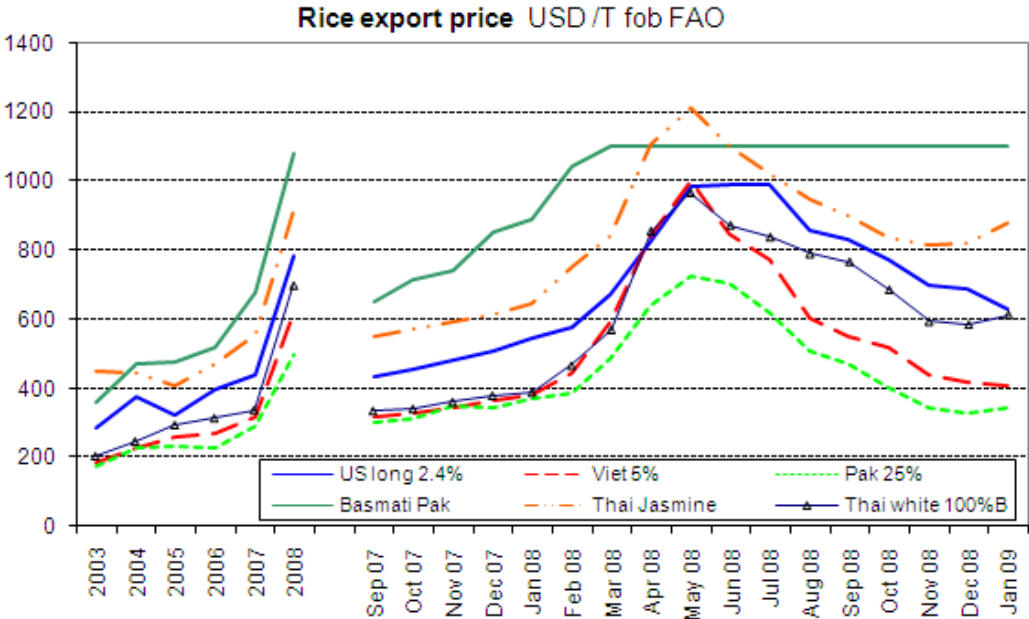
Of minor, but noticeable interest is that little exports to some countries are not recorded as import by the relevant country. For instance, India and Pakistan declare to export Basmati to Denmark in 2007-08, while no import of Basmati is recorded in Denmark, from India neither Pakistan, since several years. This may be explained by the location of a trader(s) in Denmark, may be in a free port, which is shipping this rice to some milling company not



located in the same country. Another possibility is the general proneness to overestimate the export and underestimate the import.

**Basmati price evolution**

Basmati rice attains by far, a higher price than non-Basmati rice in both wholesale and retail markets. Basmati particularly attracts highest price on world export market. According to Child, after nearly tripling to record highs from November 2007 to May 2008, global trading prices have dropped sharply (Child, 2008). Price quotes for Thailand’s high-quality long-grain milled rice, a benchmark for global trading prices, have declined more than 40% since May. Prices for U.S. long-grain milled rice, which more than doubled from November 2007 to late April 2008, have declined more than 30%.



Source: FAO

By comparison, price of Basmati is the highest among rice from September 2007 to January 2009, but not during the peak of May 2008, with 1100 USD /T. Its evolution is more stable: after an increase of 69.2% from September 2007 to March 2008, no drop was shown from May to January 2009 (FAO, 2009). Factors acting on Basmati price seem to be related to stable increase of demand from major importers and harvest variation, rather than prices’ volatility on a rising market.

The price premium of Basmati attracts lot of players and increases competition between domestic and trade markets. Hence frequent market shortages may probably also foster fraudulent blending. The authentication of Basmati rice is an important topic since it attracts highest price on trade market. Hence, rice trade counts several players, sensitive to the market pressure thus increasingly the demand of Basmati rice, while the production does not always follow this trend.

## **DISCUSSION**

### **Authentication and traceability**

Authentication methods of rice, based on DNA tests, are implemented and validated since long time (Bligh et al., 1999). A survey using DNA test was carried out in 2003 by the British Food Standards Agency in order to measure the sincerity of labelling Basmati on rice packages sold in UK (Burns et al., 2004). Approximately one-third of the 363 samples, collected from a range of retail outlets and catering suppliers, were labelled as from India, one-third from Pakistan, and the final one third were not labelled with the country of origin. A small number of samples were labelled as mixed origin.

All samples claimed to be Basmati rice as written on their labelling. While 196 (54%) samples were found to contain only Basmati rice, non-Basmati rice was detected in 167 (46%). 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 63 (17%) samples had non-Basmati rice content, greater than 20%. Of great concern were the 31 (9%) samples that were found to have non-Basmati rice content greater than 60%.

On a market where demand exceeds by far supply, stakeholders are sometimes tempted to act in borderline manner (World Trade Review, 2008). Hence, the presence of “semi-basmati” and “product uncertainties” is noticed by literature based on field studies (Goel and

Bhaskaran, 2007). Another issue on authentication and traceability of Basmati is the genetic selection and parentage of hybrid lines.

### **Lineage and parentage**

The market pressure, and expected earnings from stakeholders as well, led to improve yields of the most expensive rice. The genetic selection, so far, gave several hybrids that now content small percent of traditional Basmati pure line.

Presently, the different recognized lines of Basmati vary from Pakistan to India. It is questionable when the list of native and indigenous lines of Basmati will be defined according to the GI protection in one hand and trade pressure on another. Basmati 370 was identified in 1933, Super Basmati was developed in 1995 (Bashir *et al.*, 2007). Nowadays, Basmati 2000 & Pusa 1121 are sold as Basmati, albeit not always showing strong links to either Basmati pure lines or Punjab region. Some basmati-related seeds are now released in Nepal, Bangladesh, Texas or even Italy. Basmati sowing trials are noticed in Balochistan in Pakistan, in Uttar Pradesh, Rajasthan and Karnataka in India. However, agronomic and climatic conditions are very different from Punjab. Hence genetic selection gave adapted hybrids able to resist to water scarcity or salt abundance or very hot temperature or weeds attacks and so on. These hybrids are coming from Basmati lines in a modest extent. Hence the final characters of such hybrid lines are far from genuine traits of pure Basmati lines.

More generally, the long list of Basmati lines may confuse non-skilled stakeholders and consumers as well. At least 60 lines of Basmati rice are released on the world seed market. The list includes the name of the major pure lines and various hybrids as well. Of the largest aromatic germplasm maintained at IRRI, about 86 are described by the name Basmati irrespective of grain dimensions and intensity of aroma: Pakistan (67), India (9), Nepal (7), Bangladesh (2) and Sri Lanka (1). Comparing these with Basmati standards, only 18 qualify as Basmati (Singh *et al.*, 2000). A harmonious combination of minimum kernel dimension,

intensity of aroma, texture of cooked rice, high volume expansion during cooking made up by linear kernel elongation with minimum breadth-wise swelling, fluffiness, palatability, easy digestibility and longer shelf life qualify a rice to be Basmati in consumers' and traders' view (Singh et al., 2000).

In September 2008, India put Pusa 1121 into the official list of Basmati lines (Gulf Times, 2008). Pusa 1121 is a hybrid released in 2003, which is the world's longest grain, but contains just 5% of traditional Basmati line. This newly bred variety has yield two times more than traditional tall basmati cultivars such as Taraori. It also scores high in terms of aroma, greater elongation upon cooking and less chalky grain content. This event is the most recent of a long list of re-branding hybrid lines into Basmati family in order to provide trade market to the expected quantities of basmati-like rice.

Listing what is Basmati or not at this stage may lead to endless controversy, as complex figure will perpetually come out from crossbreeding developments. It might be worth to consider how to better and clearly define what might be the percent of parentage kept into hybrid in order to make new varieties eligible to qualify as Basmati lineage. Instead of making such trade-off on trade basis, it might be preferable to use the end characteristics that make the segmentation between Basmati and coarse rice: fragrance and cooking qualities. Hence, yield improvement would be a secondary factor, not jeopardizing Basmati authenticity and origin.

Basmati is a trade-oriented commodity that attracts number of stakeholders because of price premium, even when they are located far from Punjab, home of Basmati. Hence a clarification of crop areas and seeds lines variety might enhance authenticity of GI Basmati and would allow at improving reliability of Basmati supply chain actors as well (Chandola, 2006; Marie-Vivien, 2008). This will act in favour of a more sustainable market for Basmati.

## CONCLUSION

The previous observations give suitable orientation for the revision of the export standards from India and Pakistan, and for the updating of importers Code of Practice as well. Clean and fair practices should be promoted within the rice commodity chain in order not to mislead the consumers. The recent move to register Basmati as GI trademark in Pakistan might lead to improved traceability (Mohsin, 2008). Likewise protection of true to type Basmati under national laws will add to transparency in Basmati rice trade. Whereas, the WTO Agreement on TRIPs does not require a member to protect geographical indications unless they are protected in their country of origin (Article 24.9), but once India and Pakistan have passed an appropriate Law, retrospective action becomes possible to prevent firms in other countries marketing rice grown outside the Indian subcontinent as Basmati. However, India and Pakistan still have much to gain from taking prompt legislative measures, because a Geographical Indication system can have retrospective effect (Pirzada, 2001).

According to the trade orientation of Basmati rice, Geographical Indication scheme might fit better if based upon Protected Geographical Indication (PGI), rather than upon Protected Designation of Origin (PDO). The last requires that all cropping, processing and packaging stages must be done into the region of origin, while the first only needs the rooted location of one of these stages. PGI fits well with the actual supply chain organisation prevailing in Basmati industry. Based upon old reputation of product's high quality and strong independent controls of compliance with code of practices, PGI scheme is compatible with important scale of production and broad marketing. Still under free market regime, Basmati rice trade may take benefits from protection of rice origin in order to avoid end consumers misleading.

Consequently, a split between GI *Basmati from Punjab* and coarse basmati might be foreseen. GI *Basmati from Punjab* would come from the region of origin with clear traceability of

varieties with strong evidence of parentage with Basmati pure lines. This must be written into the code of practices related to the PGI certification. On another hand, some coarse basmati might take a fringe market share for those importers where local consumers are more price sensitive or under influence of strong branding strategies and less sensitive to aroma or authenticity of rice. To be confirmed, this forecast needs further investigations, especially by using a more complete literature overview and improved reliability of data collected.

## **BIBLIOGRAPHY**

- Abedullah, Kouser S., Mushtaq K., 2007. Analysis of technical efficiency of rice production in Punjab (Pakistan). *Pakistan Economic and Social Review*, 45 (2), winter, 231-244.
- Bashir K., Khan N.M., Rasheed S., Salim M. 2007. Indica rice varietal development in Pakistan: an overview. *Paddy & Water Environment*, 5, 2, June, 73-81.
- Bhattacharjee P., Singhal R.S., Kulkarni P.R., 2002. Basmati rice: a review. *International Journal of Food Science and Technology*, 37, 1-12.
- Bligh H.F.J., Blackhall N.W., Edwards K.J., McClung A.M., 1999. Using amplified fragment length polymorphisms and simple sequence length polymorphisms to identify cultivars of brown and white milled rice. *Crop Science*, 39, 1715-1721.
- Burns J., McQuillan M., Woolfe M., 2004. *Survey on Basmati Rice*. Food Standards Agency, report 47.04, March, 29 p.
- Calpe C., 2005. International trade in rice: recent developments. *World Rice Research Conference*, 492-496.
- Calpe C., Prakash A., 2005. Sensitive and Special Products – a rice perspective. *Commodity Market Review*, FAO, 49-71.
- Chandola H.V., 2006. Basmati Rice: Geographical Indication or Mis-Indication. *Journal of World Intellectual Property*, 9 (2), 166-188.
- Chaudhary D., Tran D.V., Duffy R., 2003. *Speciality Rices of the World: Breeding Production and Marketing*. FAO books, 358 p.
- Childs N., 2008. *Rice Situation and Outlook Yearbook*. ERS, USDA, November, 92 p.
- Childs N., Kiawu J., 2009. Factors Behind the Rise in Global Rice Prices in 2008, RCS-09D-01, ERS, USA, May, 25 p.
- FAO, 2008. *Rice Market Monitor*, XI (2), July, 35 p.
- FAO, 2009. *Rice Market Monitor*, XII (1), February, 39 p.

- Giraud G., 2008. Range and Limit of Geographical Indication Scheme: the Case of Basmati Rice from Punjab, Pakistan. *International Food and Agribusiness Management Review*, vol. 11, Issue 1, February, pp 51-76.
- Goel V., Bhaskaran S., 2007. Marketing practices and distribution system of rice in Punjab, India. *Journal of International Food & Agribusiness Marketing*, 19, 1, 103-135.
- Marie-Vivien D., 2008. From Plant variety Definition to Geographical Indication Protection: A Search for the Link Between Basmati Rice and India/Pakistan, *The Journal of World Intellectual Property*, 11 (4), 312-344.
- Mohsin M., 2008. Registration of Basmati as a GI Trademark. *Trade Marks Registry*, Government of Pakistan, May 10, 4 p.
- Mushtaq K., Dawson P.J., 2002. Acreage response in Pakistan: a co-integration approach, *Agricultural Economics*, 27, August, 111-121.
- Pirzada, W.H., 2001. National Intellectual Property Rights [IPRs] System, life-form patenting and sustainable agriculture. *Journal of Science Technology & Development*, 20 (3), 36-48.
- Singh R.K., Singh U.S. and Khush G.S. (eds), 2000. *Aromatic Rices*. Oxford & IBH Publ., 283 p.
- Singh H.N., Singh U.S., Singh R.K., Singh V.K., Singh S.P., Mani S.C., 2006. Adoption pattern and constraints analysis of basmati rice: Implications for enhancing adoption and stabilizing productivity in Uttaranchal, India. *Indian Journal of Crop Science*, 1 (2), 106-108.

#### **DATA BASE**

- Commission européenne, 2008. CIRCA library, agriculture, DG Agriculture, November, 20, [http://circa.europa.eu/Public/irc/agri/cereals/library?l=/publicdomain/rice/basmati\\_weeks.xls/ EN 1.0 &a=d](http://circa.europa.eu/Public/irc/agri/cereals/library?l=/publicdomain/rice/basmati_weeks.xls/ EN 1.0 &a=d)
- Department of Commerce, 2008. Export-Import Data Bank, India, <http://commerce.nic.in/eidb/ecom.asp>
- Trade Development Authority of Pakistan, 2008. Export statistics and trends, June 2007-July 2008, [http://www.tdap.gov.pk/v1/statistics/october08/100908/by\\_product.xls](http://www.tdap.gov.pk/v1/statistics/october08/100908/by_product.xls)

#### **PRESS SOURCES**

- Gulf Times*, November 12, 2008. New move set to boost basmati rice exports.
- Independent Bangladesh*, March 19, 2008. India practices unfair trading in Basmati exports.
- The World Trade Review*, October 15 2008. Pakistani rice being sold with Indian label, 8 (19).