



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## **Sensitive Product Designation in the Doha Round: The Case of Rice**

Alvaro Durand-Morat and Eric J. Wailes  
Research Specialist and L.C. Carter Professor  
Department of Agricultural Economics and Agribusiness  
Division of Agriculture, University of Arkansas

Selected Paper prepared for presentation at the Southern Agricultural Economics Association  
Annual Meeting, Orlando, Florida, February 5-8, 2006.

Copyright 2006 by A. Durand-Morat and E. Wailes. 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.

## **Sensitive Product Designation in the Doha Round: The Case of Rice**

Effects of sensitive product designation in WTO trade reform on the international rice market are analyzed. A partial equilibrium framework is used. Results suggest large impacts. Among exporters, China and the U.S., major suppliers of the Japanese and South Korean markets, are most negatively affected.

*Key Words: rice, sensitive product, WTO, trade*

**JEL Classifications:** F13, Q17

## ***Introduction***

Although the General Agreement of Tariffs and Trade (GATT) of 1947 applied to industrial as well as agricultural products, it was not until the Uruguay Round of GATT that agriculture became a vital part of multilateral negotiations. In the Uruguay Round Agreement on Agriculture (URAA) developed and developing countries, to different degrees, committed themselves to cap and decrease the levels of import tariffs, export subsidies, and trade-distorting domestic support (Amber and Blue Box payments). However, the impact of the URAA on achieving freer and more market-oriented agricultural markets is a debatable. Domestic support among OECD countries remains high even after the URAA<sup>1</sup>, and more so for particular commodities such as rice and sugar, with producer subsidy equivalents (PSE) of 82 percent and 45 percent, respectively (OECD, 2005). Import barriers remain high for agricultural products<sup>2</sup>, as a result of either high import tariffs or a combination of small quotas and prohibitive over-quota tariffs in the cases of tariff-rate-quotas (TRQs). Tariff escalation also continues to be used, mainly among developing countries. Finally, export subsidies continue to be granted at still high levels, mainly by the European Union (EU) (Ingco and Nash, 2004).

A new round of World Trade Organization (WTO) negotiations began in Doha, Qatar, in November 2001 (known as the Doha Development Agenda, DDA). Negotiations on agriculture were included and were expected to be completed at the Hong Kong ministerial meeting in December 2005. While the Hong Kong ministerial did produce an agreement on export subsidies, no agreement has been forthcoming on market access and domestic support. Despite the slow progress in agricultural negotiations and the differences that still exist among

---

<sup>1</sup> Domestic support to agriculture among OECD countries is estimated at USD 311 billion in 2001.

<sup>2</sup> According to OECD (2001), average agricultural tariffs are about six times higher than for industrial tariffs. The fact that tariff cuts were measured, as average cuts instead of cuts in average tariffs, together with no trade-weighted averages, are factors argued to have constrained the effect of URAA.

negotiating groups (WTO, 2005 a), estimates of potential benefits of DDA are substantial, even after more recent analyses have reduced the expected size of the impact. According to an earlier World Bank analysis (2002), benefits from global agricultural trade reform were estimated at around USD 248 billion<sup>3</sup>, 57 percent of which would be captured by developing countries. More recent analysis by the Hertel and Keeney (2005) using an updated GTAP model estimates full trade liberalization benefits to be only \$85 billion, of which \$55.7 billion would result from agricultural trade liberalization. Anderson and Martin (2005) report benefits from global trade reform to be around USD 287 billion, of which \$182 would derive from food and agriculture, and with developing countries capturing around 45 percent. However, according to the same authors, market access issues such as sensitive product designation and special safeguard mechanisms could greatly diminish the extent of the gains. They estimate that gains could shrink by 75 percent if 2 percent and 4 percent of the HS6 agricultural tariff lines for developed and developing countries, respectively, are classified as sensitive products<sup>4</sup>.

The main objective of this study is to analyze the effects of sensitive product designation on the international rice market. Two key assumptions of this study are, first, that four countries, namely, Japan, South Korea, Indonesia, and the Philippines would request the sensitive product designation for rice; and secondly, it assumes that the provisions of the U.S. proposal would become the final outcome of the negotiations (table 1). As of December 2005, several proposals for agricultural reform were available, with varying approaches for how sensitive products should be treated. The impact of sensitive product designation is evaluated by comparing the results out of the U.S. proposal without special concessions for sensitive products with a scenario

---

<sup>3</sup> This benefit is obtained assuming fixed productivity. When allowing for productivity changes, benefits more than double.

<sup>4</sup> Anderson and Martin do not state how the 2 percent and 4 percent of HS6 agricultural tariff lines are allocated. However, which products are to be designated as sensitive would greatly affect the results.

in which four countries, namely, Japan, South Korea, Indonesia, and Philippines declare rice as sensitive product.

**Table 1. Outline of major provisions of the U.S. proposal for agricultural negotiations.**

<i>Tariffs of Developed countries</i>			<i>Tariffs of Developing countries</i>		
<i>Tiers</i>	<i>Beginning of tier</i>	<i>End of tier</i>	<i>Tiers</i>	<i>Beginning of tier</i>	<i>End of tier</i>
0 – 20	55%	65%	0 – 20	36.67%	43.33%
20 – 40	65%	75%	20 – 40	43.33%	50.00%
40 – 60	75%	85%	40 – 60	50.00%	56.67%
>60	85%	90%	>60	56.67%	60.00%
Cap at	75%		Cap at	112.5%	
<i>Bound Overall Distorting Support</i>		<i>Reduction</i>	<i>AMS (Amber Box) bound</i>		<i>Reduction</i>
Over \$60 billion		75%	Over \$25 billion		83%
\$10-\$60 billion		53%	\$12-\$25 billion		60%
\$0-\$10 billion		31%	\$0-\$12 billion		37%
<i>de minimis</i> threshold		2.5%			

#### **Other Important Points**

1. Volume of TRQs for sensitive products to increase by 7.5 percent of the consumption during the period 1999-01
2. Elimination of in-quota tariff, and reduction of over quota tariff by 20 percent
3. Cap Blue Box program payments at 2.5% of total value of agricultural production
4. Product specific and non-product specific de minimis threshold cut to 2.5%
5. Rapid elimination of export subsidies by no later than 2010.
6. More regulation on State Trading Agencies
7. Review of Food Aid policies, more discretion for donors to meet emergency status.
8. Elimination of differential export taxes.

#### ***Sensitive Product Designation***

As a result of differences regarding how extremely high import tariffs are to be reduced, the special safeguard provisions outlined in article V of the URAA were included. The provisions gave developed and developing countries the chance to request special concessions regarding market access of relevant, highly protected, agricultural products. However, the URAA did not provide any framework on how these products would be designated. Four countries utilized the concessions and designated sensitive products, namely, Japan, Philippines,

and South Korea for rice and Israel for some particular animal products. These countries established minimum market access (MMA) quotas that would progressively expand over the implementation period until reaching 8 percent of base period domestic consumption for developed and 4 percent for developing countries.

Regarding sensitive products, the *July 2004 Package* that guides DDA negotiations states that, “without undermining the overall objective of the tiered [tariff reduction] approach, Members may designate an appropriate number, to be negotiated, of tariff lines to be treated as sensitive, taking account of existing commitments for these products.” The framework also states that the principle of “substantial improvement” will apply to each sensitive product, and will be achieved through combinations of tariff quota commitments and tariff reductions applying to each product. As can be seen, the framework provides little guidance on how sensitive products are to be determined, the extent of the commitment, and how “substantial improvement” in market access expansion is to be achieved.

Among agricultural products, rice is likely to be granted the sensitive designation by several countries, on the basis of various rationales including food security and to protect a culturally rooted activity. Japan has already expressed its intention to request sensitive product designation for rice as well as for other agricultural products (Asian Economic News, 2005). South Korea already negotiated in the WTO in 2005 an extension of MMA on rice, and committed to double its MMA to 8 percent over the next 10 years starting in 2005 (USTR, 2005). Even with only these two countries declaring rice as sensitive product, gains from DDA for the rice sector would likely be significantly reduced based on the high level of protection they exercise. Whereas the global, trade-weighted import tariff on rice<sup>5</sup> is estimated at 50.5 percent in

---

<sup>5</sup> Rice here represents the sum of paddy rice (HS100610); brown rice (HS100620); milled rice (HS100630); and broken rice (HS100640). The value of import policies is estimated at USD 3.1 billion.

2002, the ad-valorem import tariff equivalents for Japan and South Korea during the same period are estimated at 786 percent and 386 percent, respectively. These two countries primarily import medium grain processed rice<sup>6</sup>, which suggests that changes in market access in these countries would primarily affect the medium grain rice trade sector and to a lesser extent the long grain segment through cross effects.

### ***Methodology***

The analysis is conducted using a partial equilibrium model developed for this study. This model enables us introduce a great level of sectoral detail and thus capture intra-sectoral impacts. It is a multi-region, multi-product model. It divides the global rice market into 53 regions (including the major rice producers and traders), three rice types (long grain non-aromatic, long grain aromatic, and medium + short grain rice), and three sectors, each generating one final product (paddy rice, brown or partially-milled rice, and white or fully-milled rice). The production side is represented by CES production functions, whereas the final demand for rice (by type) is represented by Cobb-Douglas demand functions. Import demand is modeled using the Armington approach. The baseline corresponds to fiscal year 2002.

Results are decomposed using the approach suggested by Harrison, Horridge, and Pearson (2000).

### ***Policy Assumptions***

As previously cited, the main assumption of this study is that the final outcome of DDA agricultural negotiations is to be similar to the provisions of the U.S. proposal outlined in table 1 above. The impact of sensitive product (SP) designation is evaluated by comparing the results from two scenarios:

---

<sup>6</sup> South Korea's MMA commitment in 1995 included more stringent import measures for fully processed rice. For this reason, South Korea became mainly a brown rice importer. In the case of Japan, most of its imports are of fully processed rice.



1. *USP Without SP*: The U.S. proposal is to be implemented without granting special treatment to sensitive products;
2. *USP With SP*: U.S. proposal is to be implemented allowing Japan, South Korea, Indonesia, and the Philippines to declare rice as a sensitive product.

**Table 2. Main assumptions in market access for key rice traders in each scenario under consideration.**

<i>Region</i>	<i>Initial Bound Tariff</i>	<i>Final Bound Tariff</i>	<i>Final Bound Tariff</i>	<i>Quota Level</i>	<i>Applied Tariff<sup>t</sup></i>
<i>Paddy Rice</i>	<i>USP Without SP</i>		<i>USP With SP</i>		
Brazil	55%	25%	25%		3%
El Salvador	40%	20%	20%		40%
EU25	105%	10%	10%		87%
Honduras	35%	18%	18%		25%
Mexico	9%	5%	5%		1%
<i>Brown Rice</i>	<i>USP Without SP</i>		<i>USP With SP</i>		
Brazil	55%	25%	25%		0%
EU25	104%	10%	10%		85%
Japan	805%	75%	644%	97%	843%
South Korea	471%	113%	377%	187%	388%
<i>Milled Rice</i>	<i>USP Without SP</i>		<i>USP With SP</i>		
Nigeria	150%	60%	60%		75%
Brazil	55%	25%	25%		0%
Indonesia	160%	64%	128%	3,844% <sup>2</sup>	30%
Philippines	50%	23%	40%	274%	50%
Japan	1066%	75%	853%	97%	780%
South Korea	169%	68%	135%	187%	121%

1. Information from own rice database.

2. The volume of the TRQ agreed by Indonesia is 70 tmt. An increase of 7.5% of the average consumption in 1999-01 represents an additional 2.7 mmt.

## Results

Based on calculations from our rice database and the estimated impacts from the simulations, it is expected that reforms in the global rice market would significantly reduce actual trade barriers and tariff overhang. Tables 3 and 4 below show the aggregate market access figures for the baseline as well as the two scenarios under consideration.

The results suggest that SP designation would greatly constrain expansion in market access for rice. A significant reduction in both the overall applied and bound tariffs on rice is estimated for scenario *USP Without SP*, whereas practically no changes on the trade weighted applied tariff are expected in the scenario *USP With SP*. The estimations are based on the applied tariff by Japan and South Korea as the tariff-equivalent value of the quota rent. This assumption, along with the significant increase in medium grain market shares of both Japan and South Korea, result in still high estimates of applied tariffs in the medium grain market.

**Table 3. Trade-weighted applied and bound import tariffs for rice in 2002.**

<i>Variable<sup>1</sup></i>	<i>Applied Import Tariff</i>	<i>Bound Import Tariff</i>	<i>Tariff Overhang</i>
All rice	42.7%	74.1%	31.4%
Paddy rice	17.9%	35.0%	17.1%
Of which LG	17.9%	35.0%	17.1%
Brown rice	127.9%	158.8%	30.9%
Of which LG	41.1%	76.9%	35.8%
Of which MG	262.9%	286.1%	26.2%
White Rice	40.1%	72.9%	32.8%
Of which LG	24.0%	57.8%	33.8%
Of which MG	227.9%	295.2%	67.3%
Of which FR	26.7%	32.8%	6.2%

1. LG: long grain; MG: medium grain; FR: fragrant rice.

**Table 4. Trade-weighted applied and bound import tariffs for both scenarios.**

<i>Variable</i>	<i>Applied Import Tariff</i>	<i>Bound Import Tariff</i>	<i>Tariff Overhang</i>
<i>USP Without SP</i>			
All rice	18.6%	22.8%	4.2%
Paddy rice	11.6%	15.9%	4.5%
Of which LG	11.6%	15.9%	4.5%
Brown rice	48.5%	63.5%	15.0%
Of which LG	5.6%	23.7%	18.1%
Of which MG	80.6%	93.3%	12.7%
White Rice	18.6%	22.8%	4.2%
Of which LG	18.1%	22.7%	4.6%
Of which MG	21.1%	21.3%	0.2%
Of which FR	3.8%	4.4%	0.6%
<i>USP With SP</i>			
All rice	39.6%	43.4%	3.8%
Paddy rice	11.6%	16.0%	4.4%
Of which LG	11.6%	16.0%	4.4%
Brown rice	156.5%	165.0%	8.5%
Of which LG	4.7%	22.6%	17.9%
Of which MG	297.0%*	297.3%*	0.3%
White Rice	34.2%	43.4%	9.2%
Of which LG	8.3%	24.1%	15.8%
Of which MG	183.7%	188.3%	4.6%
Of which FR	24.8%	25.4%	0.6%

\*The increase in applied and bound import tariffs results from the significant market share gain of South Korea, which goes from 34% to 56% of total medium grain brown trade.

Based on the partial equilibrium findings, SP designation by Japan, South Korea, Indonesia, and the Philippines would likely impact the global rice market significantly. Table 5 presents the results of both scenarios on aggregate global rice trade and prices. The results suggest that rice trade would expand only slightly when SP designation is allowed. Increases in total rice trade are expected to be significant in the scenario *USP Without SP*. Paddy rice trade is estimated to slightly decrease in both scenarios. These findings, along with the increase in trade of brown and milled rice, suggest a significant reduction in tariff escalation, cited in the literature as a relevant problem in the rice market (Wailes et al, 2004). Further insight on the changes in

tariff escalation effects can be obtained from analyzing the changes in U.S. rice exports presented in table 7 below.

Most of the top rice traders are expected to benefit significantly as a result of the policy outcomes from both scenarios. However, India is expected to experience a large drop in aggregate exports. This is due to the fact that, during 2002, rice export subsidies were estimated at approximately 50 percent (USDA, FAS, 2002) and, as a result of the U.S. proposal, they are to be removed completely by the end of the implementation period.

**Table 5. Partial Equilibrium impact of U.S. proposal with and without SP designation on aggregate volume of trade and prices.**

<i>Variable<sup>1</sup></i>	<i>USP Without SP</i>	<i>USP With SP</i>
Global Volume of Rice Trade	14.3%	0.8%
Global Volume Trade Paddy Rice	-0.5%	-1.1%
Of which LG	-0.5%	-1.1%
Global Volume Trade Brown Rice	51.0%	33.5%
Of which LG	5.3%	5.6%
Of which MG	114.9%	75.7%
Global Volume Trade White Rice	13.0%	-0.9%
Of which LG	-5.8%	-8.3%
Of which MG	142.9%	23.3%
Of which FR	6.5%	7.6%
World Price Paddy Rice	18.6%	16.2%
Of which LG	18.6%	16.2%
World Price Brown Rice	18.7%	16.0%
Of which LG	8.6%	6.7%
Of which MG	32.8%	28.6%
World Price White Rice	17.5%	15.7%
Of which LG	21.4%	19.2%
Of which MG	23.4%	20.2%
Of which FR	4.9%	4.8%

Table 6 presents the estimated changes in the value of rice trade and the value market share for some of the major rice traders resulting from the two scenarios under consideration. In the aggregate, SP designation is expected to constrain the gains in value of exports by

approximately 8 percent of the baseline value<sup>7</sup>. The disaggregation of the result by type of rice and milling degree shows potential increases in trade value in all segments of the rice market, but more importantly for brown and fully processed rice. This also supports the idea that tariff escalation effects would decrease in either scenario, but to a greater extent in scenario *USP Without SP*.

**Table 6. Changes in value of rice trade (at world prices by type and milling degree) and market shares for major traders (valued at world prices) a result the policy reforms in both scenarios.**

<i>Rice Type and Milling Degree</i>	<i>Base Share<sup>1</sup></i>	<i>USP Without SP</i>	<i>USP With SP</i>
Total Value of Rice Trade		35.3%	27.5%
Total Value Paddy Exports		17.9%	14.9%
Total Value Brown Exports		85.7%	60.0%
Of which LG		13.9%	12.6%
Of which MG		185.3%	26.1%
Total Value White Exports		33.3%	14.3%
Of which LG		14.4%	9.3%
Of which MG		199.6%	48.2%
OF which FR		11.7%	12.8%
<i>Exporter</i>	<i>Base Share<sup>1</sup></i>	<i>USP Without SP</i>	<i>USP With SP</i>
China	6.6%	18.4%	8.8%
India	21.7%	9.2%	10.2%
Thailand	29.5%	29.0%	33.1%
USA	13.4%	15.7%	16.8%
Vietnam	10.0%	10.7%	11.7%
<i>Importer</i>	<i>Base Share<sup>1</sup></i>	<i>USP Without SP</i>	<i>USP With SP</i>
Brazil	1.9%	1.5%	1.7%
EU25	6.6%	5.7%	6.5%
Indonesia	8.1%	6.4%	6.2%
Japan	3.7%	16.2%	7.4%
Philippines	4.9%	5.4%	4.7%
South Korea	1.0%	2.8%	2.6%

1. Source: Own rice database.

<sup>7</sup> For the specific 2002 year, the total c.i.f. value of rice trade was estimated at USD 6.3 billion. Therefore, as of 2002, SP designation would constrain the gains in trade value by slightly over USD 500 million.

The value market share among exporters is expected to be altered to some extent by the designation of SP. China and to a lesser extent the U.S. are expected to benefit the most from granting no special treatment to rice. As previously said, India is estimated to experience a dramatic decrease in exports, a situation that will be exacerbated to some extent as a result of the designation of rice as SP by Japan, South Korea, Indonesia, and the Philippines.

Results for importers also suggest a significant impact of SP designation, especially for Japan. Differences in the impact of either scenario on the market shares for South Korea, Indonesia, and the Philippines are expected to be minimal.

The impact on the U.S. rice sector is a significant increase in rice production in both scenarios; however, SP designation is estimated to constrain the expansion in production to some degree (Table 7). The increase in rice output results from a remarkable increase in U.S. rice exports, since the aggregate final demand for domestic rice in the U.S. is expected to remain practically unchanged in both scenarios. The total value of U.S. rice production is expected to increase by 47 percent and 38 percent in the scenario *USP Without SP* and *USP With SP*, respectively<sup>8</sup>.

Rice exports from this region would increase significantly in either scenario in response to higher world rice prices (table 5), although SP designation would constrain the gains to some extent. As previously cited, trade substitution away from paddy into processed rice is expected. The value of U.S. rice exports is expected to increase by 58 percent and 46 percent for scenarios *USP Without SP* and *USP With SP*, respectively.

---

<sup>8</sup> In 2002, this difference would have been approximately USD 100 million.

**Table 7. Partial Equilibrium impact of the two scenarios on the U.S. rice industry.**

<i>Sectoral Variable</i>	<i>USP Without SP</i>	<i>USP With SP</i>
Total Volume Trade	19.8%	16.3%
Volume Trade Paddy Rice	-3.8%	-4.2%
Volume Trade Brown Rice	48.8%	60.3%
Of which LG	59.6%	60.7%
Of which MG	39.9%	63.2%
Volume Trade White Rice	27.8%	18.6%
Of which LG	18.8%	16.2%
Of which MG	46.6%	23.6%
Rice Production	9.7%	8.2%
Of which LG	8.0%	7.1%
Of which MG	14.6%	11.5%
Final Rice Consumption	0.3%	0.1%
Of which LG	0.4%	1.4%
Of which MG	-4.1%	-5.9%
Of which FR	3.8%	4.8%
Export (fob) Price Rice	26.7%	24.0%
Export (fob) Price Paddy Rice	21.3%	18.6%
Export (fob) Price Brown Rice	37.7%	29.3%
Of which LG	17.8%	15.6%
Of which MG	50.7%	38.3%
Export (fob) Price White Rice	26.5%	21.2%
Of which LG	15.2%	13.3%
Of which MG	45.1%	34.1%
Producer Price LG	21.3%	18.6%
Producer Price MG	57.7%	43.6%
Consumer Price LG	15.2%	14.2%
Consumer Price MG	45.1%	31.7%
Consumer Price FR	4.5%	6.4%

Approximately 82 percent of U.S. rice imports during the baseline were aromatic rice from Thailand and India; the remaining 18 percent were medium grain imports mainly from Australia. The total volume of U.S. rice imports is expected to increase by around 13 percent (56 percent and 3.9 percent increase in medium and aromatic rice imports, respectively).

The results suggest that, given the significant increases in market prices for both long and medium grain rice, adjustments in the LDP program for rice to achieve a reduction in the value of LDP payments of 43.3 percent would not be needed. LDP payments to the medium grain sector are likely to be zero, whereas for the long grain sector LDP payments are estimated to decrease by around 34 percent when SP are considered and 31 percent when no SP are allowed.

### ***Conclusions***

Overall, results suggest a significant impact of sensitive product designation on international rice trade. Sensitive product designation is estimated to significantly affect the level of applied tariff and, consequently, volume of trade. Among exporters, China and the U.S., the major suppliers of the Japanese and South Korean markets, are likely to be negatively affected by the designation of rice as sensitive product. U.S. rice production and volume of exports are estimated to be affected by the differential concessions granted to rice.

### ***References***

- Asian Economic News (2005). Japan Makes New Proposal on Sensitive Farm Products in WTO Talks. Issue 12/19/05.
- Ingo, M.D., and J.D. Nash (2004). *Agriculture and the WTO: Creating a Trading System for Development*. The World Bank. Washington, D.C.
- Anderson, K., and W. Martin (2005). Agricultural Trade Reform and the Doha Development Agenda. *The World Economy*, Vol 48, Issue 9, pages 1301-1327.
- Harrison, W.J., J.M. Horridge, and K.R. Pearson (2000). Decomposing Simulation Results with Respect to Exogenous Shocks. *Computational Economics*, vol. 15, pp. 227-249.
- Hertel, T.W. and R. Keeney (2005). "What is at Stake: The Relative Importance of Import Barriers, Export Subsidies, and Domestic Support." In *Agricultural Trade Reform and the Doha Development Agenda*, ed. K. Anderson and W. Martin. Basingstoke, U.K.: Palgrave Macmillan; Washington, DC: World Bank.
- Organization for Economic Cooperation and Development (2005). Producer and Consumer Support Estimates. At [www.oecd.org](http://www.oecd.org)



The World Bank (2002). Reshaping Global Trade Architecture for Development. In Global Economic Prospects. Washington, D.C.

U.S. Department of Agriculture, Foreign Agriculture Service (2002). GAIN Report # IN2009: India Grain and Feed Annual. At [www.fas.usda.gov](http://www.fas.usda.gov)

U.S. Trade Representative (2005). United States and Republic of Korea Reach Agreement on Rice Imports. At [www.ustr.gov](http://www.ustr.gov).

World Trade Organization (2005, a). News of the Doha Development Agenda: Lamy: “We Need to Act Now.” At [www.wto.org](http://www.wto.org)

Wailes, E.J., A. Durand-Morat, L. Hoffman, and N. Childs (2004). Tariff Escalation: Impacts on U.S. and Global Rice Trade. Presented at the American Agricultural Economics Association Annual Meeting, Denver, CO.

*Appendix*

**Table A 1. Production and trade figures for the regions defined in RICEFLOW.**

Region	Production (1,000 mt milled basis)			Exports (1,000 mt milled basis)			Imports (1,000 mt milled basis)		
	Long Grain	Medium Grain	Fragrant	Long Grain	Medium Grain	Fragrant	Long Grain	Medium Grain	Fragrant
Afghanistan	260	0	0	0	0	0	162	0	18
Argentina	425	0	0	224	0	0	5	1	0
Australia	96	410	0	96	341	0	0	2	59
Bangladesh	25,250	0	0	0	0	0	351	4	0
Brazil	6,880	0	0	0	0	0	557	1	0
Canada	0	0	0	0	0	0	105	62	66
China	82,274	54,849	0	1,653	301	0	1	2	299
Costa Rica	100	0	0	0	0	0	86	0	0
Cote d'Ivoire	483	0	0	0	0	0	1,434	0	0
Cuba	200	0	0	0	0	0	537	1	0
Egypt	0	3,775	0	0	464	0	0	0	0
El Salvador	2	0	0	0	0	0	77	9	0
EU-25	770	855	0	0	239	0	604	70	467
Ghana	168	0	0	0	0	0	170	12	0
Guatemala	30	0	0	0	0	0	47	3	0
Guyana	265	0	0	142	0	0	0	0	0
Haiti	35	0	0	0	0	0	285	7	0
Honduras	6	0	0	0	0	0	99	4	0
Hong Kong	0	0	0	0	0	0	2	43	268
India	88,363	0	757	4,328	0	744	1	4	0
Indonesia	33,750	0	0	0	0	0	2,968	5	0
Iran	2,175	0	0	0	0	0	804	0	14
Iraq	326	0	0	0	0	0	1,130	0	0
Japan	0	8,290	0	0	0	0	77	453	85
Kenya	30	0	0	0	0	0	163	0	0
Malaysia	1,540	0	0	0	0	0	460	17	7
Mexico	228	0	0	0	0	0	519	11	0
Nicaragua	175	0	0	0	0	0	92	14	0
Nigeria	2,270	0	0	0	0	0	1,807	0	0

**Table A 1. Continued.**

Region	Production (1,000 mt milled basis)			Exports (1,000 mt milled basis)			Imports (1,000 mt milled basis)		
	Long Grain	Medium Grain	Fragrant	Long Grain	Medium Grain	Fragrant	Long Grain	Medium Grain	Fragrant
North Korea	0	1,450	0	0	0	0	284	12	0
Other African countries	4,273	0	0	0	0	0	1,124	130	25
Other Asian countries	20,620	0	0	0	0	0	308	178	6
Other Central Amer. & Caribbean countries	60	0	0	0	0	0	171	7	1
Other European countries	39	0	0	0	0	0	76	168	16
Other Middle East countries	18	0	0	0	0	0	419	274	690
Other Oceania countries	0	0	0	0	0	0	392	54	0
Other South American countries	2,956	0	0	0	0	0	88	5	0
Pakistan	2,977	0	1,268	1,013	0	590	3	0	0
Peru	1,505	0	0	0	0	0	33	0	0
Philippines	8,050	0	0	0	0	0	1,184	0	0
Russian Federation	330	0	0	0	0	0	301	110	4
Saudi Arabia	97	0	0	0	0	0	199	138	523
Senegal	55	0	0	0	0	0	894	0	0
Singapore	0	0	0	0	0	0	401	8	2
South Africa	0	0	0	0	0	0	706	2	1
South Korea	0	5,510	0	0	0	0	21	145	7
Suriname	95	0	0	37	0	0	0	0	0
Thailand	14,392	0	3,082	5,779	0	1,583	15	0	0
Turkey	0	245	0	0	0	0	226	117	0
United States	5,123	1,800	0	2,473	792	0	20	66	330
Uruguay	715	0	0	600	0	0	2	0	0
Vietnam	21,555	0	0	3,230	0	0	9	0	0
Yemen	0	0	0	0	0	0	154	0	29
<b>Total</b>	<b>328,960</b>	<b>77,183</b>	<b>5,108</b>	<b>19,574</b>	<b>2,138</b>	<b>2,918</b>	<b>19,574</b>	<b>2,138</b>	<b>2,918</b>