

THE INDIAN MARKET FOR PIGEON PEAS

Market Survey #09

INTRODUCTION

The pigeon pea (*Cajanus cajan*), also known as red gram, *tur*, *toor* or *aghar* in India, is not really a pea as its name implies but is actually a grain legume (pulse). It is produced on a commercial basis across the tropics, particularly in the Indian subcontinent and East Africa. In these parts of the world, the crop is primarily grown for canning or split pulse (*dal*). On a smaller scale, it is also grown as a shade or cover crop to protect and balance nitrogen for young coffee trees, forest seedling nurseries, and vegetable beds.

Pigeon pea cultivation prevents soil erosion through its extensive root system and provides mulch through its fallen leaves. Due to its deep rooting system, the pigeon pea does not compete for nutrients with other crops and is therefore valuable for intercropping with cereals (millet, sorghum, and maize). In addition, it has an inherent ability to withstand environmental stress, specifically short periods of drought.

Pigeon peas are a highly convenient pulse product and are sought out by consumers and industrialists for low price and easy long-term storage. Though dried pulses are still popular amongst ethnic consumers, pulses such as pigeon pea are increasingly sold in canned or frozen form. Pigeon peas provide a strong source of micronutrients, including vitamins A, C, and B, and iron and calcium. They serve as a good addition to a staple-based meal, complementing the protein profile and supplying iron. As consumers become increasingly nutrition-conscious, concerns about animal-proteins have emerged, pushing health food trends towards legumes such as pigeon peas. The purpose of this market analysis is to inform Kenyan producers and traders about the size, trends, and outlook for the pigeon pea market. The analysis provides a snapshot of the Indian market, which is the largest import market for pigeon peas and one that has exhibited continual growth over the past decade.



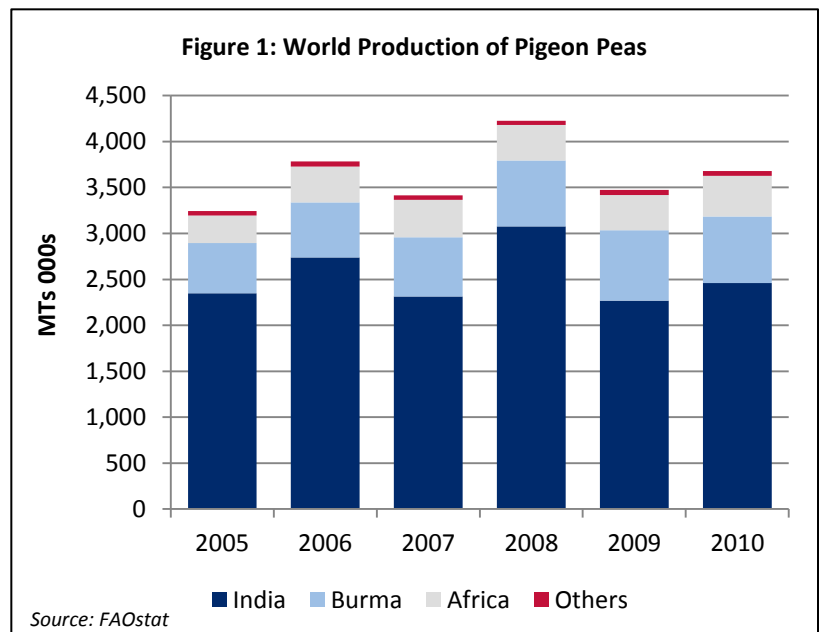
Photo by Fintrac Inc.

Fresh green pigeon peas

PRODUCTION

From 2005-2010, world production of pigeon peas increased from 3.24 million Metric Tons (MTs) to 3.68 million MTs, an increase of 13 percent. In 2010, India was the largest producer of pigeon peas and accounted for 2.46 million MTs, or 66.8 percent of global production. Burma was the second largest producer at 724,200 MTs or 19.7 percent of total production. The next four largest producers are all located in Africa: Malawi (182,900 MTs), Kenya (103,300 MTs), Uganda (93,000 MTs), and Tanzania (55,000 MTs).

Over the same time period, Malawi and Burma significantly increased pigeon pea cultivation, recording a net production increase of 186 percent and 32 percent, respectively. Tanzania, Uganda, and Kenya recorded modest production increases of 15 percent, 9 percent, and 8 percent, while India noted a modest rise of 5 percent. Pigeon pea production in India has stagnated over the last decade, despite increasing demand, due to a



number of environmental challenges facing Indian pulse growers that have both lowered domestic yields and motivated pulse farmers to convert land previously used for pulse cultivation to cereal production.

IMPORTS

Though **India** is the largest pigeon pea producing country, domestic production consistently falls short of demand. Indian imports of pigeon pea have skyrocketed in the past decade (see Figure 2). Estimates of 2010 pigeon pea imports range from 300,000 to 400,000 MTs, indicating a 2,900 percent increase from imports of 10,000 MTs in 1998. Imports are expected to continue growing over the next five years given shortfalls in domestic production.

The Indian market prefers varieties of pigeon pea that most closely resemble Indian-produced varieties. These close substitutes include Burma-produced *lemon tur* and Tanzania-produced *Arusha* and *Madwara* varieties. White pigeon pea is heavily preferred over red pigeon pea, and color should be deep and consistent throughout the pea. Additionally, length of milling time and cooking time needed, which varies among pigeon pea varieties, greatly determines demand and price in India, with a preference for shorter cooking and milling times.

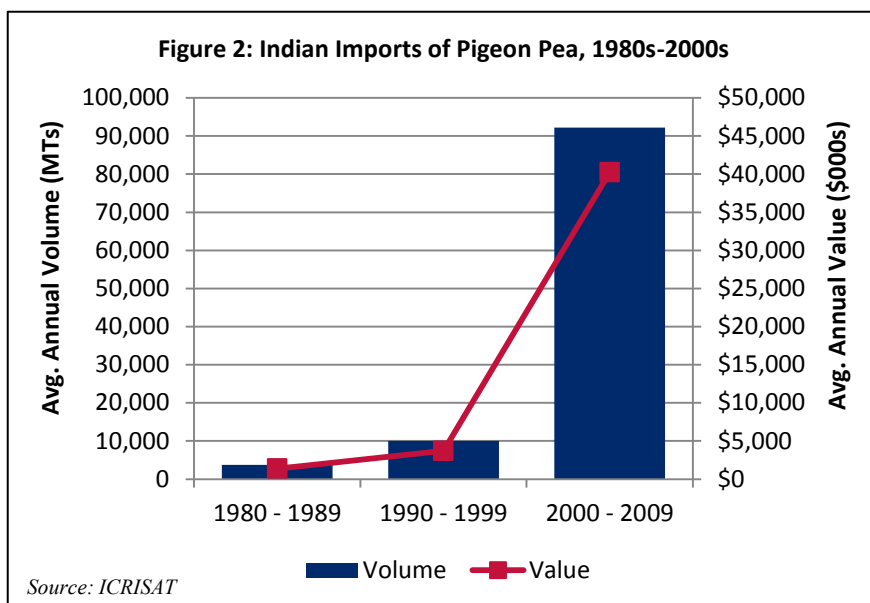
The **European Union (EU)** market for pigeon peas is described by pulse processors as being finite and niche. Due to the country's Indian ethnic population, the United Kingdom (UK) is the largest European buyer of pigeon peas and accounted for 76 percent of EU imports in 2010. The UK has experienced continual growth of its immigrant population, with annual immigration figures in the UK rising 30 percent over the past decade, including five times as many Indian immigrants in 2010 as in 2000. Increased immigration and the enduring cultural tastes of second and third-generation Indian immigrants has led to greater demand in the UK for dhal and other ethnic food for which the pigeon pea is a staple ingredient. However, pigeon pea buyers indicate that quantities required by this market are so small that they provide little opportunity to exporters. Pigeon peas imported into the EU are largely of poor quality, with insect holds of 15-20 percent, deemed unfit for the Indian market. EU pulse manufacturers then provide the necessary cleaning and processing to remove the insect problems and foreign matter damaging the pigeon pea for re-export to the Indian market.

Industry contacts regard the **United Arab Emirates (UAE)** as a processing hub for pigeon pea. UAE does not report imports by crop, but rather aggregates all pigeon pea imports with similar products under pulses. Imports of total pulse crops increased by more than 100 percent between 1990 and 2000, reaching 75,000 MT. In 2008, the UAE imported 224,586 MT of pulses, re-exporting more than 75 percent of them. Since India does not allow for the export of pigeon pea, most pigeon pea food products consumed by expatriate Indians in the United States, UK, and Caribbean are processed in Dubai. Though this market is minor compared to India's domestic market, it may afford export opportunities to East African producers.

SUPPLIERS

India is a net consumer of pigeon peas, exporting less than one tenth of one percent of their total pigeon pea production to the EU. The product that is exported is likely due to grain size that is less marketable within India; Indian millers prefer medium-grained varieties, while their European counterparts prefer large-sized grains.

Burma exported 445,520 metric tons (MT) of pigeon pea, mostly to India, in 2008. The value of which is estimated to be \$234 million. Importers favor Burmese varieties because they are most similar to those produced in India. Burmese pigeon peas are also associated with reasonable prices, low freight rates, and relatively fast delivery. However, in recent



years the country has been hurt by erratic production and significant price fluctuations. It is also likely that Burmese varieties enter the Indian market through informal and undocumented border trade.

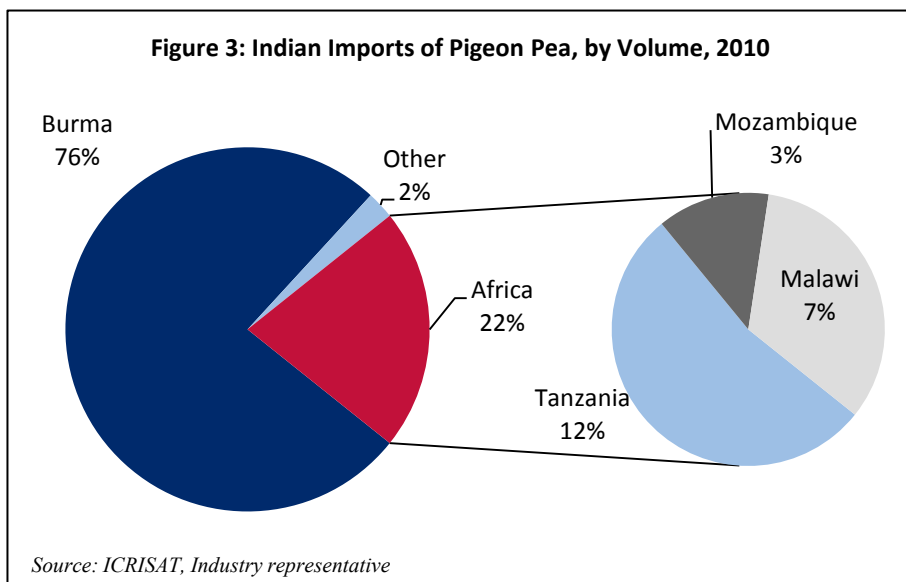
Tanzania exports mainly to India and both varieties (*Arusha* and *Madwara*) are considered the best in Africa by buyers supplying the Indian market, particularly due to their purity of color, by manufacturers working within the Indian market. Tanzania exports significant amounts of pigeon pea to India each year. Estimates for 2011 export levels imply an increase of 80,000 and 85,000 MTs.

Malawi exported 50,000 MTs to India in 2011. It is estimated that only 10 percent of processed pigeon pea in Malawi is absorbed by the domestic market, and the commercial export market remains the primary focus for Malawian producers.

However, buyer interviews indicate that Malawian pigeon pea varieties are not regarded highly by buyers serving the Indian market, given differences in taste, color, and size from domestic Indian varieties.

Mozambican pigeon pea varieties are considered to be an adequate second choice to Tanzanian varieties for Indian consumers. Mozambique exported 20,000 – 30,000 MTs of pigeon pea to India in 2011.

Kenya's pigeon pea varieties are not well known among manufacturers and buyers working with the Indian market, though there is a great deal of interest in seeking out new producer groups to help fill Indian demand. Data from Eurostat indicates that Kenyan pigeon pea exports to the EU have been increasing, which may indicate that exported peas have required cleaning and processing before being ready for the Indian market.



SEASONALITY

Pigeon pea is one of the most drought tolerant legume crops, with a wide range of rainfall tolerance. Most Kenyan varieties of pigeon pea varieties take one year to reach maturity, though about 20 percent of Kenyan farmers have adopted medium-duration (five months) and short-duration (three-four month) varieties. In India, final harvest occurs in December and January, with Burma's harvest in January and February not long after. Buyers indicate that by late summer, much of India's pigeon pea is depleted or stale. East African growers harvest pigeon pea in August, which affords a market opportunity to fill India's end-of-year demand.

Table 1: Seasonality

Country	Harvest Season
India	December – January
Burma	January – February
East Africa	July – October

PRICES

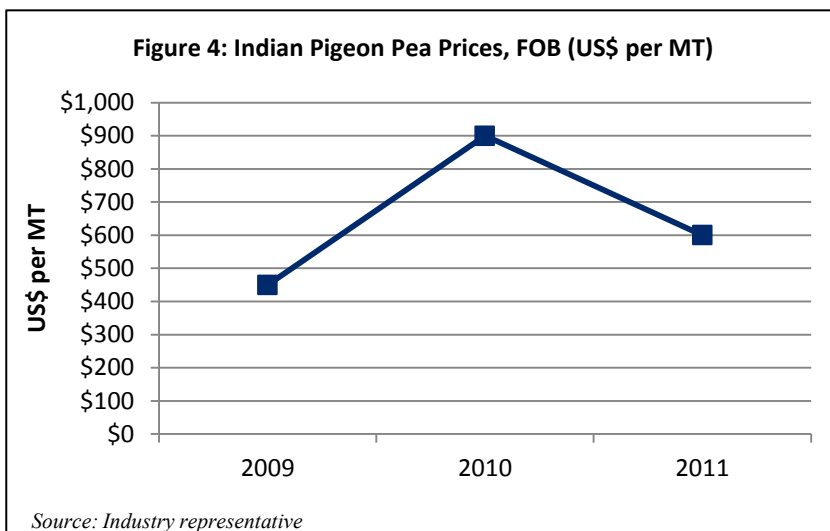
The past three years have been incredibly volatile for pigeon pea prices, peaking in the 2009-2010 harvest season when Indian production reached an all-time low.

Free-on-Board (FOB¹) Mumbai prices documented by pigeon pea buyers have fluctuated heavily over the past three years due to major instabilities in Indian pigeon pea production. For example, in the 2009-2010 harvest season import

¹ Free-on-Board or FOB is the price paid for the goods at the port of shipment. The risk of loss or damage to the goods is transferred from the seller to the buyer when the goods are loaded onto the ship (Export Insurance Services, Inc.).

prices skyrocketed from \$450/MT to \$900/MT, due to drought and other weather issues on the subcontinent affecting supply. In the last year, prices have stabilized to about \$600/MT.

Buyers report prices in the \$500-600 range per MT (FOB) for *Arusha* pigeon pea and \$500-525 for the *Madwara* variety per MT (FOB). Mozambican pigeon peas are fetching \$475-500 and Malawian pigeon peas are reported at \$450 per MT (FOB). Prices are expected to fluctuate continually, with large price peaks in response to reductions in domestic land area being cultivated for pigeon pea, storm and pest problems that reduce domestic yields, and/or political constraints to large-scale trade with Burma.



Kenyan producers may have an advantage in the export market, due to relatively inexpensive shipping costs to India. For instance, the cost of exporting a 20-foot container of pigeon peas to Mumbai is \$500–800 from Kenya, but \$800–1200 from Tanzania and \$1,800 from Malawi.

STANDARDS, LAWS, AND REGULATIONS

Tariff and Trade

To ensure adequate domestic supplies of pulse crops, the Indian government has taken several steps to keep pigeon peas and other pulses in the country to ensure food security. In 2006, exports of pulses were banned and an import duty of 10 percent was removed. This status was extended in 2011. Fees do apply at port, including a phytosanitary fee. No approval, restriction, or license from the Indian government limits the import of pigeon pea into India. Pulses, including pigeon pea, require an Agriculture Permit for Consumption issued by the exporting country. An approximation of Indian port charges from the United States Department of Agriculture (USDA) is included below.

Table 2: India, Selected Charges Paid at Indian Ports

Selected Charges	US\$ per MT
Phytosanitary Fee	\$6.25-\$8.33
Unloading of bulk shipment	\$10.41
Bagging	\$2.51-\$4.16
Warehouse Storage (monthly)	\$1.04

Source: USDA Economic Research Service

Grades and Standards

In India, approximately 80 percent of traded pulses are classified as “Fair to Average Quality” (FAQ), which is the only universal grade in the Indian marketing system. However, this grade is not fully standardized since grading is done by visual inspection. Anecdotally, Indian buyers enforce their own specifications. For example, one importer requires a moisture limit of 10 percent, with zero foreign matter and less than 0.5 percent of other edible grain and 0.5 percent of damaged grain (with less than 3 percent weevil-contaminated grain). Another importer requires that the combination of foreign matter, damaged and weevil-contaminated peas, and other grains not exceed 4 percent of the total mass.



Photo by Fintrac Inc.

Farmer in eastern Kenya harvesting pigeon peas

According to Codex standards, pigeon peas are subject to a 15 percent moisture limit, with less than 1 percent extraneous matter of which not more than 0.25 percent can be mineral matter and not more than 0.10 percent can be dead insects, fragments or remains of insects, and/or other impurities of animal origin. Standardized quality specifications are described below:

“Pigeon peas are required to be sound, dry, fresh and light to medium brown in color. A greenish tinge is allowable. The sample must contain a minimum of 99 percent by weight of pigeon pea seed material. The sample must not contain more than 2 percent by weight of defective pigeon peas and not more than 1 percent poor color pigeon peas. The foreign material must not exceed 2 percent by weight, of which no more than 1 percent shall be unmillable material. Moisture content may not exceed the 13 percent maximum.”

Packaging

Pigeon peas must be packed in gunny bags/jute bags, poly-woven bags, poly pouches, cloth bags or other suitable packages that are clean and secure. Indian buyer preference is for 25kg or 50 kg poly pouch bags. For export to the EU or UAE, pigeon peas packed together must be of the same type and of the same grade designation, and each package must be securely closed and sealed. Indian importers prefer to have pulses sorted, graded, and milled in India because the cost of labor for processing is significantly lower than in exporting countries.

Depending on the level of pre-transit processing, dark-colored packaging is optimal for preserving nutrient content and castor oil is sometimes used as a preservative. India does not have bulk handling facilities at ports and inland markets, so bulk imports must be bagged upon arrival. Bagging costs in India (\$4-5 per MT) are far lower than the charges associated with containerized shipments. While containerized cargo tends to arrive in better condition than bulk shipments, importers indicate that the grain in quality is not sufficient to justify the higher shipping costs.

Post-harvest Handling

After harvesting, entire air-dried pigeon pea plants are threshed and seed is cleaned. Clean bins prevent insect attack, which can be considerable. If peas are stored after being split, risk of beetle attack is substantially reduced. Processing includes milling (for *dhal*-making, in India), canning, or freezing of fresh pigeon pea. Processing of pigeon pea is generally known as *Dal* milling or de-hulling.

Effective January 1, 2004, the Plant Quarantine Regulation of Import into India Order, 2003 dictates that Indian pulse imports from all origins are subject to fumigation by methyl bromide at the port of loading to protect domestic production from stem and bulb nematode, pea cyst nematode, and bruchids. However, the USDA reports that the Indian government has granted periodic extensions, allowing fumigation by methyl bromide at the port of arrival in India on an ad hoc basis.

OUTLOOK

Despite rising prices, Indian demand for pulse crops, especially pigeon pea, remains strong and consumption continues to outpace domestic production. With little progress in yield improvement, pulses have become an unattractive crop choice for Indian farmers. Trends in yield, climate, and total area under cultivation for pigeon pea indicate continually decreasing output figures for Indian production. In 2012, government data recorded 3.87 million hectares sown with pigeon peas by Indian farmers, compared with 4.55 million hectares last season. With growing demand and falling supply, the import market for pigeon pea in India is expected to remain very strong.

India imports are close to 400,000 MT of pigeon peas each year, mostly from Burma and Tanzania, with no sign of slowing consumption or imports. Demand for pigeon pea has risen continually in India, and domestic production has experienced several setbacks leaving sizable room for new pigeon pea exporters. The production calendar of East Africa provides a large advantage to Kenyan pigeon pea exporters entering the Indian market. While Indian production can only



Photo by Fintrac Inc.

Farmer in eastern Kenya preparing fresh pigeon peas for sale

supply domestic consumption for the first 6-8 months of the year, East African pigeon peas are well-placed to compete in the Indian market in the fall and winter months.

Prices will continue to fluctuate, with substantial peaks in response to domestic production shortfalls. General price trends show overall growth in the long-term, given that downward trends in domestic production of pigeon pea show no sign of reversing.

Major competition for market share comes from Burma and Tanzania, which produce the most popular imported pigeon pea varieties in India. However, there will likely be plenty of room in the market for any East African producer that can meet Indian quality standards. Buyers were confident that the pigeon pea market would continue to grow, and “anything Kenya can produce, we can sell.”

ANNEX

Table 3: Farm Gate Prices for Pigeon Pea (US\$ per MT)

Producers	Dominican Republic	India	Jamaica	Kenya	Malawi	Nepal	Philippines	Puerto Rico	Trinidad and Tobago	Venezuela
2009	\$628	\$318	\$1,979	\$469	\$693	\$1,034	\$1,087	\$6,067	\$1,335	\$2,700
2008	\$728	\$317	\$2,370	\$514	\$604	\$1,058	\$1,069	\$5,828	\$1,338	\$2,497
2007	\$688	\$345	\$2,149	\$496	\$551	\$953	\$670	\$4,894	\$1,214	\$1,644
2006	\$665	\$484	\$2,407	\$417	\$481	\$782	\$785	\$4,844	\$1,108	\$585
2005	\$686	\$435	\$2,242	\$412	\$496	\$773	\$722	\$6,954	\$1,025	\$478
2004	\$424	\$404	\$1,396	\$421	\$440	\$712	\$670	\$4,000	\$978	\$903
2003	\$437	\$391	\$1,575	\$410	\$570	\$398	\$694	\$2,249	\$917	\$929
2002	\$581	\$367	\$1,730	\$367	\$351	\$475	\$649	\$3,319	\$965	\$688
2001	\$568	\$364	\$1,979	\$339	\$408	\$294	\$386	\$2,652	\$945	\$702
2000	\$463	\$338	\$2,081	\$416	\$418	\$295	\$475	\$2,336	\$778	\$605

Source: FAOStat

Table 4: Maximum Residue Limit (MRL): Pigeon Pea (parts per million)

	Codex Standard (ppm)
Azoxystrobin	3
Bifenazate	7
Boscalid	3
Flubendiamide	2
Gamma Cyhalothrin	0.2
Lambda Cyhalothrin	0.2
Spinosad	0.3
Thiamethoxam	0.01
Zeta-Cypermethrin	0.7

Source: International MRL Database

Table 5: Pigeon Pea Grading Requirements

Parameter		Grade 1	Grade 2	Grade 3
Physical characteristics		The Pigeon Peas shall be sound, dry, fresh and light to medium brown in color. They shall be sweet, clean, wholesome, uniform in size, shape, color and in sound merchantable conditions.		
Purity				
<i>Whole Pigeon Peas, defective Pigeon Peas and seed coats. (minimum by weight)</i>		99.00%	97.00%	97.00%
Moisture % (max. by weight)		10	12	14
Damage % (by mass unless specified)	<i>Heated or rotten</i>	0	3 kernels/500g	1
	<i>Mold</i>	0	6 kernels/500g	2
	<i>Split/broken</i>	2	3	4
	<i>Immature seeds</i>	1	2	3
Defective (maximum by weight)				
<i>Pigeon Peas not of the specified variety. Pigeon Peas that are bin burnt, broken, caked, chipped, frost damaged, heat damaged, insect damaged, sappy, shriveled, split, sprouted, weather damaged, wrinkled and affected by mold (field or storage). Includes pods that contain pigeon peas, whether broken or unbroken, and loose seed coat.</i>		3.00%	5.00%	8.00%
Poor Color (max. by weight)				
<i>Pigeon Peas whose seed coat or kernels are distinctly off color from the characteristic color of the predominating class.</i>		1.00%	1.00%	1.00%
Weeviled grains (max. by count)		0.50%	1.00%	2.00%
Foreign Matter (max. % by mass)	<i>Excorta</i>	0.01	0.01	0.01
	<i>Ergot</i>	0	0.05	0.05
	<i>Insect Parts</i>	0.02	0.02	0.02
	<i>Sclerotinia</i>	0.05	0.05	0.05
	<i>Stones or shale</i>	0.1	0.2	0.5
Foreign Material (max. by wgt.)				
<i>Unmillable material and all vegetable matter other than Pigeon Pea seed material.</i>		0.50%	1.00%	2.00%
Other edible grains (max. by wgt.)				
<i>Any edible grains (including oilseeds) other than the one which is under consideration</i>		0.50%	0.50%	2.00%
Other varieties (max. by mass)		1	3	4
Unmillable material (max. by wgt.)				
<i>Soil, stones, metals and non-vegetable matter</i>		0.10%	0.50%	0.50%
Snails (max. allowable)				
<i>Dead or alive. Whole or substantially whole (more than half) including bodies per 200g sample.</i>		-	1	1
Field Insects (max. allowable)				
<i>Dead or alive per 200g sample</i>		1 (dead)	15	15

Ryegrass Ergot (max. allowable)			
<i>Pieces laid end to end per 200g sample</i>	0	2.00 cm	2.00 cm
Uric Acid (max. allowable)			
<i>Maximum per kg sample</i>	100.00 ml	100.00 ml	100.00 ml
Aflatoxin (Total ppb)			
<i>Total Aflatoxin including (AFB1+AFB2+AFG1+AFG2)</i>	10	10	10
Fumonisin (Total ppb)			
<i>Total Fumonisin including (FB1 + FB2 + FB3)</i>	5	5	5

Source: East African Standard Draft

REFERENCES

1. "AGFACTS: Cowpea, lablab, and pigeon pea," C.L. Mullen, J.F. Holland, L. Heuke, NSW Agriculture; 2003.
http://www.dpi.nsw.gov.au/_data/assets/pdf_file/0006/157488/cowpea-lablab-pigeon-pea.pdf
2. "Cajanus cajan (L.) Millsp," Le Houérou, FAO.
<http://www.fao.org/ag/AGP/AGPC/doc/Gbase/DATA/PF000150.HTM>
3. "Chickpea and Pigeonpea Economies in Asia: Facts, Trends and Outlook," Rao P Parthasarathy, PS BIRTHAL, S Bhagavatula, MCS Bantilan, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT); 2010.
<http://www.icrisat.org/what-we-do/impi/projects/tl2-publications/regional-situation-outlook-reports/rso-cp-pp-asia.pdf>
4. "CODEX Standard for Certain Pulses," CODEX STAN 171-1989; (Rev. 1 - 1995).
<http://www.sindhagrimarketing.gov.pk/CodexPulses.pdf>
5. "East African Standard," Pigeon Peas Specification and Grading; 2010.
http://www.eac-quality.net/fileadmin/eac_quality/user_documents/3_pdf/CD-K-454-2010_Pigeon_peas_-_Specification.pdf
6. "Emerging challenges and issues of pulses imports in India," Yogesh Yugalkishore Biyani, Varsha S. Sukhadeve, Asian Journal of Management Research; 2010.
<http://www.ipublishing.co.in/ajmrvol1no1/EIJMRS1039.pdf>
7. "Global and Regional Trends in Production, Trade, and Consumption of Food Legume Crops," Sitou Akibode, Mywish Maredia, Department of Agricultural, Food and Resource Economics, Michigan State University CGIAR; March 2011.
<http://impact.cgiar.org/sites/default/files/images/Legumetrends2.pdf>
8. "Immigration to the UK: the key facts visualized," The Guardian; June 2010.
<http://www.guardian.co.uk/news/datablog/2010/jun/26/non-eu-immigration-uk-statistics>
9. "India Crop Sector: Situation and Outlook," Market Outlook Report 2.4; Agriculture & Agri-Food Canada, August 2010.
http://www.agr.gc.ca/pol/mad-dam/pubs/rmar/pdf/rmar_02_04_2010-08-26_eng.pdf
10. "India: Grain and Feed Annual Report 2010," A. Govindan, USDA Foreign Agricultural Service Global Agricultural Information Network (GAIN); February 2010.
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Grain%20and%20Feed%20Annual_New%20Delhi_India_2-17-2010.pdf
11. "India's Pulse Sector: Results of Field Research," Gregory K. Price, Rip Landes, A. Govindan, USDA Electronic Outlook Report from the Economic Research Service; May 2003.
<http://ddr.nal.usda.gov/bitstream/10113/38892/1/CAT11135230.pdf>
12. "Lifting the Level of Awareness on Pigeonpea – A Global Perspective," MG Mula and KB Saxena, ICRISAT; 2010.
http://eprints.icrisat.ac.in/953/1/LiftingTheLevel_OfAwarenessOnPigeonpea.pdf
13. "Low Pulse," Savvy Soumya Mishra, Centre for Science and Environment; February 2010.
<http://cseindia.org/content/low-pulse>
14. "Peas aplenty?" Fresh Info; June 2008.
http://www.freshinfo.com/index.php?s=r&ss=fd&sid=45913&s_txt=peas
15. "Pea production devastated by floods," Fresh Info; July 2007.
http://www.freshinfo.com/index.php?s=n&ss=nd&sid=42468&s_txt=pea
16. "Pigeon Pea can be another top RP export," Jennifer Ng, Business Mirror; November 2010.
<http://www.businessmirror.com.ph/component/content/article/53-agri-commodities/3442-pigeonpea-can-be-another-top-rp-export>
17. "Potential of pigeonpea (Cajanus cajan (L.) Millsp.) in Africa," Natural Resources Forum 31, Damaris Achieng Odeny; 2007. 297–305.
http://www.zef.de/module/register/media/63c0_narf_157.pdf
18. "Poverty Reduction Effects of Agricultural Technology: A Micro-evidence from Tanzania," Solomon Asfaw, Menale Kassie, Franklin Simtowe, Leslie Lipper, FAO Agricultural Development Economics Division, International Maize and Wheat Improvement Center, International Crops Research Institute for the Semi-Arid Tropics (ICRISAT). 2009.
<http://www.csaee.ox.ac.uk/conferences/2011-EDiA/papers/304-Asfaw.pdf>
19. "Prices of India's pigeon peas may rise on low output," Meenakshi Sharma, Deepak Sharma, Reuters; December 2011.
<http://in.reuters.com/article/2011/12/16/india-pigeon-peas-idINL3E7LB26X20111216>
20. "Pulse Crops in the Middle East and North Africa," Agriculture and Agri-Food Canada; March 2002.
<http://publications.gc.ca/collections/Collection/A27-18-15-5E.pdf>
21. "Rice and Pulses Market in the EU," CBI Market Survey; March 2010.
http://www.cbi.nl/marketinfo/cbi/docs/the_rice_and_pulses_market_in_the_eu
22. "Small farmers' access to high-value markets: what can we learn from the Malawi pigeonpea value chain?" Donald Makoka, University of Malawi Centre for Agricultural Research and Development; January 2009.
http://mpr.ub.uni-muenchen.de/15397/1/MPRA_paper_15397.pdf
23. "UK Trade Tariff," SECTION II - Vegetable products, Chapter 7 Edible Vegetables and Certain Roots and Tubers, Heading 0713 Dried leguminous vegetables, shelled, whether or not skinned or split.
www.tariff.businesslink.gov.uk
24. "UK vegetable industry battles dry conditions," Fresh Info; June 2011.
http://www.freshinfo.com/index.php?s=n&ss=nd&sid=53619&s_txt=pea
25. "World Pulse Markets," Sudhakar Tomar, Hakan Agro; November 2008.
<http://www.nationalspotexchange.com/PulsesMeet/PM06.pdf>