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Factors Influencing The Demand For Chickpea In India: Implications For Marketing And Promotion In The Indian Chickpea Market

By

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Abstract

The Indian Sub-Continent (ISC) is the largest pulse producing and consuming region in the world. Australian scientists, producers, processors and exporters require detailed information about these markets. One study of these markets aims to describe the Indian chickpea market and to quantify the value of quality traits in the market using statistical analysis. This paper describes the Indian chickpea market and reports the results of about forty interviews with wholesalers, retailers, processors, brokers and commission agents which were conducted in eight key Indian markets in May and August 1999. A subsequent paper will present the results of an econometric analysis, which attaches values to the product traits of samples taken at the time of the interviews.

The main conclusions of the interviews were that the Indian chickpea market is segmented mainly by the end-use. Australian desi chickpeas are perceived as not suitable for consuming whole or for making roasted chickpea because of their bitter taste. Desi chickpeas from Tanzania and Myanmar are considered to have a sweet taste. Australian desi is suitable for making dhal and flour because the bitterness is masked in the cooking. Australian desi peas are preferred to local and other imported chickpeas because of their high recovery rate, uniform and large size and low contamination. The size of kabuli chickpea is considered very important. Australia's kabuli chickpea is smaller than the preferred size. The econometric analysis will determine the importance of chickpea size.

Key words: India, chickpea, market segmentation, market survey

1. Introduction

India is the largest chickpea producing and consuming country in the world. Pulse imports to the Indian Sub-Continent (ISC) rose from less than 100,000 metric tonnes in 1980 to 1.2 million metric tonnes by 1990 as domestic production stagnated and government restrictions on imports were relaxed. Australia's exports of chickpea to India have increased dramatically

in the last decade. The proportion of Australia's chickpea export to India increased from 48% in 1989-90 to 70% in 1996-97 (Kelley, 1999).

Knowledge of the impact of quality characteristics or traits on chickpea prices in the ISC is of critical importance to scientists, exporters and farmers in Australia. A detailed understanding of the markets will allow the Australian pulse industry to discriminate within the bulk commodity market for individual pulses and develop and offer a range of grain types targeted for ISC preferences (Kelley, 1999).

Muresk Institute of Agriculture (Curtin University of Technology), Western Australia, and the International Crops Research Institute in the Semi-Arid Tropics (ICRISAT), Patancheru, India, were awarded a Grains Research Committee research grant to undertake a study of *Quantifying the value of quality traits in the Indian chickpea market*.

The objective of this paper is to identify factors influencing the demand for chickpea in India. This paper presents the results of semi-structured interviews conducted during visits to chickpea markets in India. At the same time as these interviews, 180 samples of desi-type and kabuli-type chickpeas were collected and prices recorded for subsequent laboratory and econometric analysis. The results of these analyses will be presented in a subsequent paper.

The rest of this paper is organised as follows. Section 2 describes the chickpea market surveyed. Section 3 describes the India chickpea marketing channels. Section 4 discusses segmentation in Indian chickpea market. Section 5 discusses the role of government in chickpea marketing. Section 6 examines pricing in the Indian chickpea market. Section 8 presents a summary of major findings of the market survey.

2. Locations and descriptions of markets surveyed

This study covered the major chickpea markets in India. Calcutta, Chennai (Madras), Delhi and Mumbai (Bombay) are terminal markets, where chickpea traded are mainly from major chickpea growing regions in India and from exporting countries.

The remaining four markets, Aurangabad, Bhopal, Indore, and Jalgaon, are primary/secondary markets, where the main source of chickpea supply is from domestic chickpea producing regions. The locations of these markets are shown in Figure 1.

Semi-structured interviews were conducted with key market participants (wholesalers, retailers, importers and processors, brokers and commission agents) to elicit information on the preferred quality traits of chickpea. Wholesaler-brokers, middlemen and commission agents are engaged primarily in the sale of chickpea. Wholesalers cover large trade areas and have large transactions. Brokers are wholesalers who do not take title to chickpea traded. The main function of brokers is to bring buyers and sellers of chickpea together and assist in negotiation. Commission agents are wholesalers who represent buyers or sellers of chickpea and perform few functions for their clients but do not take title in the chickpea trade. Middlemen purchase chickpea from brokers and commission agents to other businesses for resale or business use. Retailers sell chickpea directly to the final consumer, and cover small trade areas and have small transactions. Processors are dhal millers and roasted dhal or puffed chickpea millers who are engaged in processing chickpea to dhal and roasted chickpea, respectively.

Chennai

The Chennai chickpea market is located in the Tamil Nadu State of India. The soil and climate in this area are not suitable for chickpea production, hence the Chennai chickpea market is the chief centre of chickpea distribution to the rest of the state. The Chennai market depends holly on chickpeas imported from major chickpea growing regions elsewhere in India and exporting countries through the Tuticorin port (about 200 kilometres from Chennai) or via the Mumbai port. An interesting feature of this market is that all of the dhal consumed is processed outside the state. However, flour is processed locally. Chickpea is consumed mainly in the form of split chickpea. Chickpea is also consumed as roasted dhal, followed by

flour, and whole chickpea, in that order.

Calcutta

The Calcutta chickpea market is located in the eastern part of India in the West Bengal State. As in Chennai, the demand for chickpea is met through imports from primary/secondary markets and from exporting countries. Unlike Tamil Nadu, a large share of the dhal consumed is processed within Calcutta in small-scale dhal mills. Although chickpea is consumed as whole or puffed chickpea, the main use is as dhal, followed by flour and phutana, in that order.

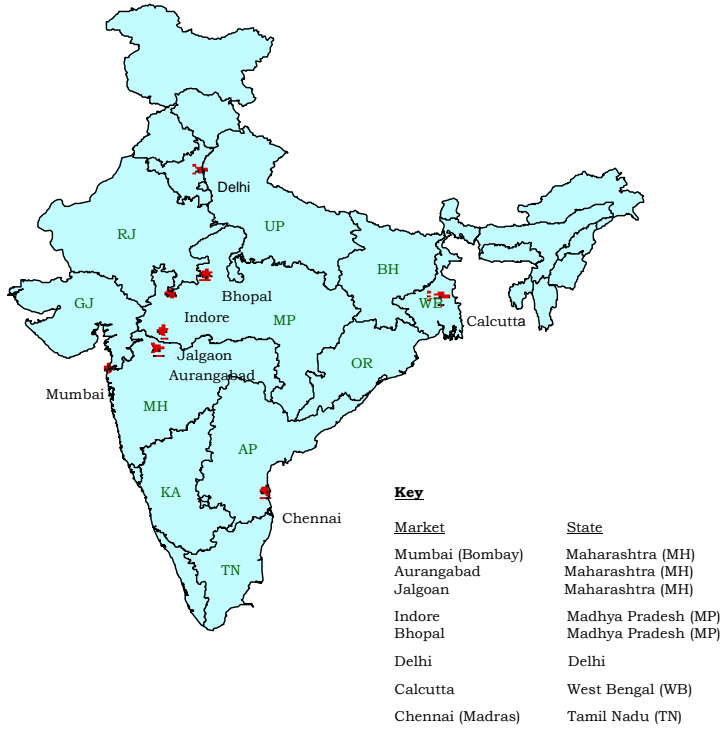
Mumbai

The Mumbai chickpea market is the biggest centre for the consumption and trade of chickpea in India. It is located in the Maharashtra State of India. In this state, chickpea is consumed mainly as whole or roasted chickpea. Nearly 80 per cent of chickpea exports to India comes through the Mumbai port. Chickpea demand in this state is met with imports from primary/secondary markets in major chickpea growing regions in India. The Mumbai port is important in India's chickpea trade because of its excellent rail system. Chickpea is exported to other terminal and primary/secondary markets as whole or split chickpea.

Delhi

Delhi, like Mumbai, is a major centre for the consumption of chickpea in India. Chickpea is consumed mainly as whole or split chickpea. Unlike Mumbai, the Delhi market does not have direct access to chickpea imports and has to depend on Mumbai port and other primary/secondary markets for chickpea supplies. Processed chickpea from Delhi is exported to all states in India.

Figure 1: Location of markets surveyed in India



Indore

Among the selected primary/secondary markets, the Indore chickpea market in Madhya Pradesh State is by far the biggest and the most active trading centre. It is also one of the largest centres for processing desi chickpea into dhal in India. The main source of chickpea supply to the Indore market is from major growing regions of India. The method of sale is through auction where traders and millers bid for different lots. The Indore market is a leading price setter in the primary/secondary chickpea markets. Unlike chickpeas in terminal market, the produce in these markets are of lower quality because they often contain foreign matter, broken and dead seed, immature seed, shrivelled seeds and damaged seeds, leading to price discounts. There are about 200 mills of varying sizes located in Indore. Dhal produced from these mills is exported to a number of regions in India and, to a lesser extent, abroad.

Aurangabad, Jalgaon and Bhopal

The main source of chickpea supply to the other primary/secondary markets, Aurangabad, Jalgaon and Bhopal, are from farmers in the chickpea growing regions. Jalgaon and Bhopal chickpea markets are important dhal producing and exporting centres. However, these markets are small compared to the Indore chickpea market. The advantage of Jalgaon over the other primary/secondary markers is that it is centrally located and well connected by rail to the major growing regions in India.

3. The Chickpea marketing channels

Market intermediaries in the Indian chickpea market play a key role in the Indian chickpea trade. About 95% of total chickpea traded in the Indian market is channelled from the main producing areas of Madhya Pradesh, Maharashtra, and Rajasthan. Licensed importers from the major chickpea exporting countries, namely, Australia, Mexico, Iran, Turkey, Tanzania, and Canada import the remaining 5% of chickpea.

Australia's performance with respect to pulse production and export since 1980 has been extraordinary. Table 1 shows chickpea exports by major pulse exporting countries. Chickpea exports from Australia have declined slightly during the period 1994 to 1996. In 1994,

Australian chickpea exports were 220.7 metric tonnes. This declined dramatically to 36.5 metric tonnes in 1995 due to drought. Chickpea exports rose to 216.7 metric tonnes in 1996. On average, Australia is a leading player in the world chickpea trade.

Table 1: Leading chickpea exporters ('000 MT)

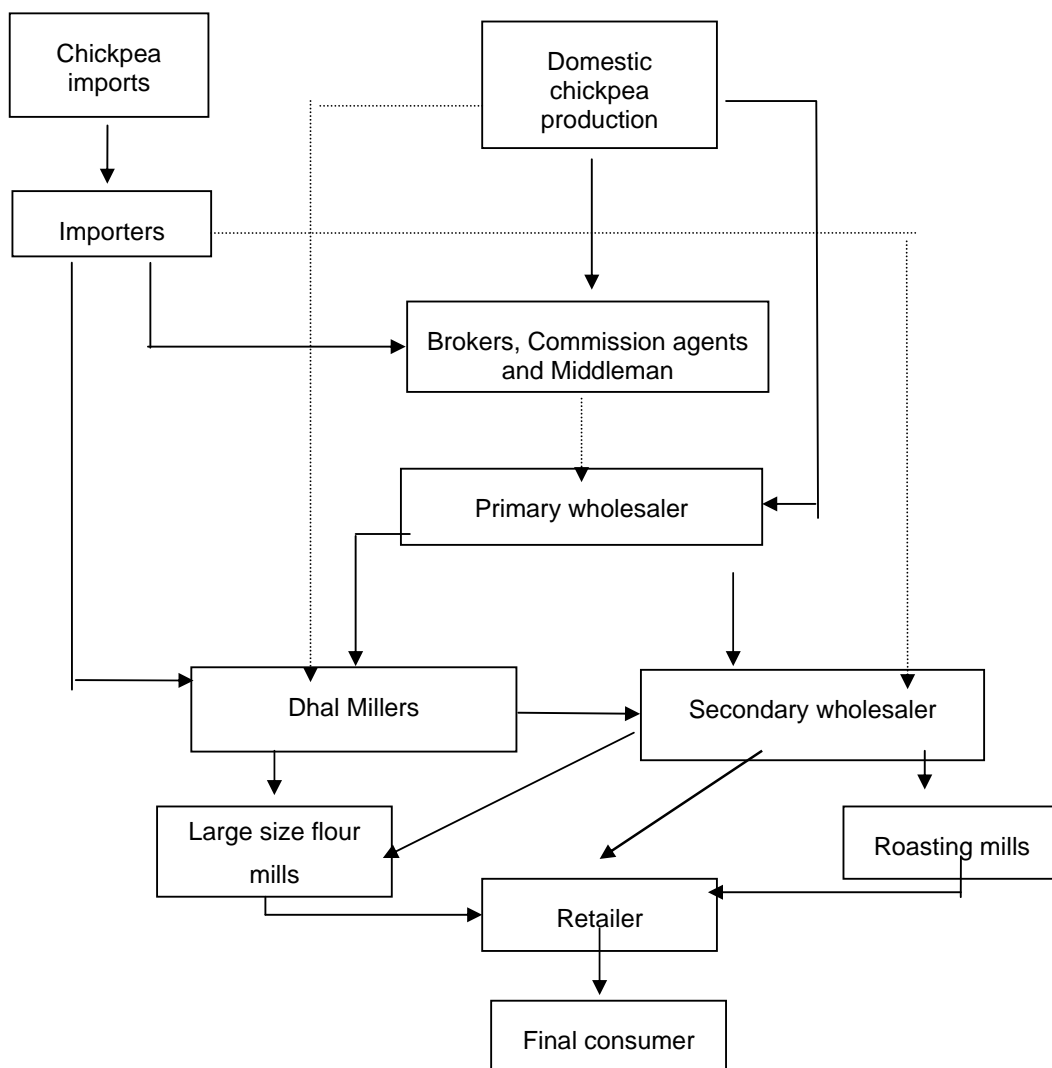
Country	1994	1995	1996	Average
Australia	220.7	36.5	216.7	158.0
Turkey	102.5	123.8	192.7	139.7
Mexico	63.8	88.2	136.8	96.3
Syria	42.4	11.9	11.9	22.1
USA	5.8	14.0	7.9	9.2
France	1.2	2.5	7.4	3.7
Lebanon	2.1	5.6	5.6	4.4
Spain	1.4	6.0	5.2	4.2
Morocco	0.3	3.1	3.7	2.4
Bulgaria	1.1	1.1	2.3	1.5

Source: Kelley (1999)

Chickpea imports are transported to other terminal and primary/secondary markets by rail or by road. The most commonly used transport is the rail system because it is about 25 per cent cheaper than road transport. As direct connection by rail to major sale posts is not always available, road transport is used to convey chickpeas to some terminal and primary/secondary chickpea markets.

The marketing system of chickpeas in India is schematically depicted in Figure 2. Chickpeas are sold in primary or secondary wholesale markets directly by the producer. Importers who are licensed to import chickpeas into India sell directly to a broker, commission agent, middlemen, or directly to a secondary wholesaler, miller or processor. The bulk of the chickpeas from brokers and commission agents are sold to the primary wholesaler, who in turn sell to millers and processors of dhal or to secondary wholesalers.

Figure 2: Chickpea marketing channels in India - a schematic diagram



The majority of chickpeas from the primary wholesaler go to millers and processors. Only a

small quantity of whole chickpeas moves from the primary market to the secondary market and reaches the consumer via the retailer. The dhal produced by the millers is sold to large mills or to secondary wholesalers. The flour moves to consumers via retail markets. A proportion of the dhal from dhal millers and primary wholesalers goes to secondary wholesalers, which is then sold to consumers as dhal through the retailer. Whole chickpeas from secondary wholesalers are sold to frying mills. Puffed or roasted chickpeas move to consumers via retail markets.

It was evident in our market survey that imported chickpeas are important in chickpea trade for a number of reasons. The first is the gap between chickpea demand and supply growth in India. A recent study by Agbola and Rao (1999) report the gap between the demand and supply growth for pulses to be 2.47 per cent per annum. This indicates that, given an increase in population and income growth of households in India, there will be pressure on India to increase imports of pulses and decrease exports of pulses. The second is the difference between the harvesting periods of chickpea in India and major chickpea exporting countries. India has two main harvest periods; one between March and April for harvesting the winter pulses, and the other in October for harvesting the summer pulses. Australia's chickpea harvest in around November provides the best opportunity to export to India at the time when there is a shortfall in domestic supply of chickpea. The third is the quality differences that exist between imported and domestically produced chickpeas. It was observed that the Indian desi chickpea is smaller in size and darker colour and contains more foreign matter. However, it tastes better than imported ones.

Australia's share of the imported kabuli chickpea market in India is second behind that of Mexico. The main reason being that the Mexican kabuli chickpea is bigger in size and lighter in colour than other imported and locally produced kabuli chickpeas. Furthermore, the Mexican kabuli cooks faster and has a good taste.

Australia's desi chickpea is preferred to local and other imported ones because of its high recovery rate, uniform and large size, and low contamination. It is estimated that the recovery

rate of Australia's desi chickpea is about 3-5 per cent higher than other imported and local ones. However, Australia's desi is perceived as not suitable for consuming whole or for making roasted chickpea because of its bitter taste. Desi chickpea from Tanzania and Myanmar is considered to have a sweet taste among imported ones.

4. Market segmentation in the chickpea market

The Indian chickpea market is highly segmented and the demand depends on end use. Four main segments were identified in the market survey: (i) the direct food use market; (ii) the split (dhal) market; (iii) the chickpea flour market; and (iv) the roasted and puffed chickpea market.

4.1 *The direct food use market*

Chickpea is used predominantly for human consumption in India. Kabuli chickpea is mostly consumed as whole seed. It is either consumed separately or combined with other dishes. The market participants interviewed pointed out that imported kabuli chickpea is highly differentiated based on size into three main groupings: 7-8 mm; 8-9 mm; and 9 mm and above. Australia's kabuli chickpea is not graded because it is uniform in size. However, it is smaller than the most preferred size in the market. *It is important that Australia label its Kabuli as a premium quality chickpea in order to be competitive with the best quality chickpea in the market.*

There are certain quality traits of kabuli chickpea that are mostly preferred by consumers. These are light yellow/cream colour, large and uniform size, good taste and thin seed coat. Seed size, colour and good taste were thought to be the most preferred quality attributes followed by thin seed coat. It was noted that the Mexican kabuli chickpea is the number one choice, followed by Australia, Iran and Turkey in that order. The Mexican kabuli chickpea is

distinguished by its larger size, attracting a premium of about \$10 -\$100 per tonne. The Indian kabuli chickpea is of a smaller size and of lower quality than imported varieties.

If Australia is to be competitive in the Kabuli-type chickpea market in India, it is important that kabuli-type chickpea export to India is differentiated on the basis of size and promoted as a chickpea with uniform size. Furthermore, there appears to be scope to improve the taste and increase the size of kabuli exported to India.

In terms of desi chickpea, consumers are thought to prefer bright or golden yellow colour, soft and light seed, which tastes good. Imported chickpeas are not considered suitable for direct food use because of the bitter taste. In the recent past, there has been an increase in demand for desi chickpea imported from Myanmar due to similar soil and climatic conditions that make the desi chickpea from Myanmar similar in taste to domestically produced Indian varieties.

The survey shows that Australia's desi chickpea is not used for direct food consumption because of its bitter taste.

4.2 The split (dhal) chickpea market

Desi chickpea is mostly consumed in split (dhal) form in India. The market surveys indicate that consumers prefer a desi type that has a high recovery rate, is of uniform shape and large size, and free from foreign matter. Millers assess the quality of desi chickpea by visually inspecting small samples from the lot. After de-hulling, the dhal is graded by size. A large-sized dhal may attract a price premium of about \$100 - \$150 per tonne. Australia dominates the desi chickpea market for making dhal. About 80-90 per cent of its export is used for making dhal. Australia's desi chickpea is considered superior to other imported and domestically produced desi-type chickpea for making dhal because of its high recovery rate, which is estimated to be about 3-5 per cent higher than the others. It has the added advantage of being free of foreign matter and has a uniform size.

Over the years, Myanmar's desi chickpea exports to India have grown and become increasingly competitive with Australia. In addition to its proximity advantage, Myanmar's desi chickpea is produced in similar climatic conditions to that of India. Therefore, the chickpea produced has a similar taste to that produced in India. However, in recent times,

Myanmar's desi exports to India often contained foreign matter making it less competitive in this market.

It is important for Australia to maintain its high standard of desi chickpea imports to India. It is important for Australia to continually monitor this market for further improvements in quality of desi chickpea from other exporting countries in order to retain its market share.

4.3 *The chickpea flour market*

The use of whole chickpea for making flour depends largely on the type of plant used for processing. It was observed that, for flour making, the size of split chickpea is not important. The most important factor identified in the interview is the recovery rate. Flour millers often use desi type chickpea of slightly lower quality than that used for making dhal. Locally produced desi chickpea are mostly used for making flour, although millers sometimes use imported ones. The colour of dhal is not a needed quality trait for flour making.

4.4 *The roasted and puffed chickpea market*

There are two types of roasted chickpea market in India: the puffed chickpea (phutana) market; and the roasted split chickpea (roasted dhal) market. Domestically produced desi-type chickpeas are often used because imported ones have a bitter taste, except for those from Tanzania and Myanmar. Desi chickpeas from Myanmar and Tanzania are used for making roasted dhal because the taste is similar to that of locally produced varieties. The preferred quality traits of roasted chickpea are large size and uniform shape. Although Gulabi (a local desi-type chickpea variety) is small compared to other desi-types, it is often used for making roasted chickpea because of its good taste, puffing quality and round shape. Gulabi chickpea fetches the highest price in the roasted chickpea market because of its superior qualities.

A summary of the preferred quality attributes of the most commonly used chickpea varieties in India is presented in Table 2 below.

Table 2: Quality characteristics and common uses of some chickpea varieties in India

Variety	Preferred quality characteristics	Common use(s)
Kabuli	Cream or white colour Large and uniform size Good taste and cooks fast	Direct food use
Desi	High recovery rate (for dhal) Light brown or yellowish colour Large and uniform size Thin seed coat Low moisture content High recovery rate	Split chickpea for making dhal Direct food use Flour (besan)
Mosambi	Light brown colour Uniform size Good puffing quality Good taste and cooks faster	Puffed chickpea (phutana) Direct food use
Kantewala	large and uniform size Light brown colour Low moisture content High recovery rate	Split chickpea for making dhal Flour (besan)
Annigeri	Large and uniform seed Medium brown colour Good puffing quality High recovery rate (roasted dhal) Good taste and cooks faster	Puffed chickpea (phutana) Roasted dhal
G5	Large and uniform seed Good puffing quality Good taste and cooks faster	Puffed chickpea (phutana))
Green Gram	Dark green colour Large and uniform size	Direct food use
Gulabi	Light brown colour Thin seed coat Low moisture content	Puffed chickpea (phutana)

Source: Market surveys.

5. Government intervention and chickpea marketing in India

India is undergoing dramatic policy and institutional reforms. Policy makers and planners in India recognise quite explicitly the importance of pulses in the diet of less-affluent people and have consistently drawn up plans to secure adequate domestic supply of pulses (AgWA, 1997).

To encourage pulse consumption, the Government of India (GOI) has removed trade barriers on imported pulses. This was due to the dramatic increase in domestic pulse production. Coupled with this is the GOI's decision under the World Trade Organisation's (WTO) rulings and the globalisation of world economies to a phased reduction of their long-standing restrictions on imports of agricultural products. Notably, although chickpea export from India is restricted, import of chickpea is free. The impact of India's trade and agricultural policies on pulse marketing in India is discussed by Kelley (1999) and therefore not presented here.

Despite these policy reforms, most crops in India are subject to restrictions on domestic trade, regulated under the *Essential Commodities Act of 1955*. Some of these restrictions include: compulsory levies on millers, stocking limits for private traders, milling reserved for only small sector industries, occasional restrictions of interstate movements, and for most crops prohibition of future trading (Gulati, 1998; Kelley, 1999).

The market participants interviewed indicated that there is no direct government intervention in chickpea marketing in India. However, they expressed concerns. Their major comments are summarised below.

First, government regulation prohibits export of split chickpea beyond 5 kilogram packs. This makes export of split chickpea more costly as the additional cost in packaging is estimated to be approximately \$7 - \$11 per tonne. On the one hand, the removal of these restrictions will lead to an increase in the demand for imported chickpea. Australia will benefit immensely from such a policy reform because most of Australia's chickpea export to India is for making dhal. On the other hand, the removal of restrictions will have an adverse effect on Australia's export to other chickpea importing countries.

Second, all State Governments levy whole chickpea exports to other states. This makes the export of chickpea from one state to another more costly. It was observed during our visit that very few imported chickpeas from terminal markets were sold in primary/secondary markets.

Currently, the state government levy is four per cent of the value of whole chickpeas leaving the state. The cost of government levy on chickpea is estimated to be between \$18 and \$37 per tonne. The objective of this levy is to encourage processing of chickpea within the state and discourage exports. It is important to note that this policy has a beneficial effect on Australia's exports because by restricting exports to other states this creates an opportunity for Australia to target potentially lucrative terminal chickpea markets in India.

This government levy poses a problem for importers/exporters of chickpea in terminal markets and major primary/secondary markets, who may have to raise or discount their prices to account for the government levy.

Third, the Government of India announces a minimum support price (MSP) for all crops, including pulses. For pulses, the MSP has generally remained below the market price, and therefore has had no impact on the demand for chickpea.

6. Pricing and the Indian chickpea market

The price paid for chickpea in Indian markets appears to differ depending on chickpea variety and the type of market. Tables 3 and 4 illustrate price differentials of some common chickpea varieties at terminal and primary/secondary markets, respectively. Analysis of samples from these markets will allow estimation of the main traits apart from location and type that contribute to price differentials.

The price differential for kabuli chickpea recorded in terminal markets is \$665 per tonne (Table 3). For other chickpea varieties, the price differential is between \$2 and \$368 per tonne in terminal markets. The terminal market showing the highest prices for kabuli chickpea is Chennai and Chennai or Mumbai for desi-type depending on the variety.

Table 4 presents estimates of chickpea price differential in primary/secondary markets. The price differential for kabuli chickpea is about \$ 642 per tonne. For desi-type chickpeas, the price differential is between \$29 and \$194 per tonne. The primary/secondary market showing the highest prices are Bhopal for kabuli chickpea, and Indore and Jalgoan for other chickpea

varieties.

Table 3: Price differential of common varieties at terminal markets in India (\$/t)

Chickpea variety	Minimum price	Maximum price	Price differential
Kabuli	595 Mumbai and Delhi	1260 Chennai	665
Desi	420 Mumbai, Delhi	595 Chennai	175
Mosambi	525 Delhi	805 Mumbai	280
Gulabi	577 Delhi	945 Mumbai	368
Annigeri	508 Mumbai	647 Mumbai	139
Green Gram	455 Delhi	545 Mumbai	90
Kantewala	497 Chennai	499 Chennai	2

Source: Market surveys.

Table 4: Price differential of common varieties at primary / secondary markets in India (\$/t)

Chickpea variety	Minimum price	Maximum price	Price differential
Kabuli	408 Indore	1,050 Bhopal	642
Desi	392 Indore	449 Bhopal	57
Mosambi	459 Bhopal	490 Indore	31

Gulabi	436 Indore	630 Indore	194
G5	429 Aurangabad	525 Jalgaon	96
Green Gram	374 Indore	403 Indore	29
Kantewala	396 Bhopal	438 Jalgaon	42

Source: Market surveys.

6. Conclusion

Several conclusions can be drawn from this survey. First, it is important to recognise that the Indian chickpea market is segmented mainly by the end-use of the product. Each market segment prefers different types of chickpea. Currently, the desi chickpea exported by Australia is not suitable for making roasted chickpea or consuming whole, largely because of its bitter taste. This is a potential market for Australia. It is important that either breeders in Australia develop chickpea varieties to meet these specific consumer needs or marketing efforts are targeted on appropriate market segments.

Second, it was observed that other chickpea exporting countries are differentiating their products. High quality chickpea attracts a premium. Thus, Australia must seriously consider a strategy for developing a brand name or trademark to differentiate its chickpea from those of other competitors, particularly as it consistently outperforms other imported and domestically produced chickpea with respect to purity (low foreign matter) and high recovery rate.

Third, the size of kabuli chickpea is very important. At the moment, Australia's kabuli chickpea is smaller than the preferred size. Production of a larger Kabuli chickpea would obtain a higher price and enable the capture of a greater market share in India.

Lastly, the quality of Australia's desi chickpea rated very highly in comparison with those from other exporting countries in terms of its recovery rate.

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