

CHAPTER 9

THE DRY BEAN SUPPLY CHAIN

9.1 Introduction

The market for dry beans in South Africa is a relatively small market; nevertheless, it plays an important role. The production and marketing of dry beans in South Africa fills an important market niche, which would otherwise have been filled by imports. It also affords the producer the benefit of planting something different from the traditional field crops, such as maize, sunflower, sorghum and other grains, and oilseeds. Based on the average of the last five seasons it was found that the area planted with beans amounts to less than 2% of the area planted with maize.

The fact that meat and other protein products have become comparatively expensive has resulted in market opportunities for non-traditional protein products; the value of dry beans is to be found here. It is a product high in protein and important in the consumers' daily diet. In terms of combating malnutrition, it has a very important role to play, and in view of the fact that it is a vegetable protein, its value is even greater.

During 2002, South Africa experienced large increases in the prices of most agricultural commodities. Dry bean prices showed an upward trend well in advance to the general increase in most agricultural product prices (see the subsequent discussion on price). The purpose of this Chapter is to provide insight into the increase in dry bean prices, particularly over the last few seasons.

9.2 An overview of the structure of the dry bean industry

The dry bean industry was formerly regulated by means of a Surplus Removal Scheme instituted in terms of the former Agricultural Marketing Act. Prices were fixed in years of surpluses under the auspices of this scheme. Bean producers were, however, free to trade their product in a free market environment. The Scheme was discontinued and the Board abolished in 1993. Several of the tasks performed by the Board were taken over by the Dry Bean Producers' Organisation (DPO) that was instituted shortly after the demise of the Board. These tasks include the provision of relevant production and marketing information, and the facilitation of bean production and marketing in general.

Figure 9.1 shows the supply chain for dry beans in South Africa. Of the total dry beans crop almost 90% goes to the pre-pack side of the market. The remaining dry beans are absorbed in the food-processing sector for various canning products. The remainder of this section will discuss the production and processing side of the supply chain.

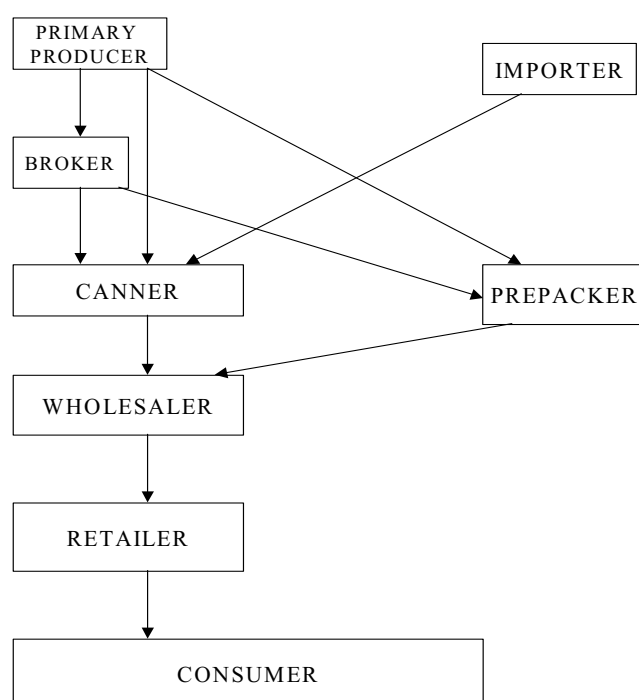


Figure 9.1: The dry bean supply chain

Source: DPO

Number of primary producers and concentration

The Dry Bean Producers’ Organisation (DPO) estimate that there are roughly 1,200 dry bean producers in South Africa, but DPO only has 588 recorded members. In addition to dry beans, all producers plant other commodities, mostly maize. Table 9.1 shows the distribution of producers in South Africa.

Table 9.1: Distribution of the number of dry bean farmers

Area	Producers
Free State	273
Mpumalanga	199
KwaZulu-Natal	22
Limpopo	15
Northwest	47
Northern Cape	17
Western Cape	15
Total	588

Source: DPO

From the data summarised in Table 9.2 it is clear that Mpumalanga is the largest bean production area followed at a distance by the Free State (mainly the eastern parts), and even more at a distance by the rest of the country. Note that even though the Free State has more dry bean farmers, they are not matching the production in Mpumalanga. Also noteworthy is the fact that yields differ significantly between provinces, e.g. in certain areas the yield is more than 2 tonnes per hectare, but in other provinces it is fractionally

higher than 1 tonne per hectare. The average for the country is very low at 1,15 tonnes per hectare.

Table 9.2: Estimated area planted for the 2002/03 season

Province	Area planted 2002/03 Ha	7 th estimate 2002/03 Tonnes	Average of previous 3 seasons (Tonnes)
Western Cape	100	150	333
Northern Cape	250	575	700
Free State	12 000	14 400	18133
Eastern Cape	100	150	-
KwaZulu-Natal	1 450	2 175	2259
Mpumalanga	30 000	33 000	35310
Limpopo	1 100	1 320	1000
Gauteng	3 000	3 300	-
North-West	2 800	3 220	4425
Total	50 800	58 290	62 160

Source: NCEC

South African dry bean canning and pre-packing markets

In South Africa, dry beans are either canned or sold in pre-packed quantities, the latter dominates the market. According to industry experts, the canning side of the market is in the region of 15,000 to 17,000 tonnes per annum. This implies that pre-packers use around 100,000 tonnes of beans per annum.

A small percentage ($\pm 15\%$) of the local bean crop is used for the canning of beans. The canners try to buy their requirements locally, but have, in the past, bought relatively large quantities on the international market. The largest canner in South Africa, which cans more than 50% of the beans destined for canning, is situated in Gauteng. Other canners are found in the Western Cape, KwaZulu-Natal and Mpumalanga. Information available at the time of writing this report indicates that there are 13 large canners in South Africa (See Table 9.3).

Approximately 85% of the dry bean crop is marketed by pre-packers, with the Red Speckled variety being the most popular. There are more than 30 large pre-packers of beans in South Africa. These pre-packers are found in most of the provinces, with the largest number located in KwaZulu-Natal (See Table 9.3).

The large concentration of pre-packers in Kwazulu-Natal could probably be explained by the fact that large quantities of dry beans are imported each year to satisfy the domestic demand in a general sense, as well as the particular nature of demand.

Table 9.3: Location and number of canners and pre-packers of dry beans

Province	Canners	Pre-packers	Traders
Free State		1	
Mpumalanga	4	4	
KwaZulu-Natal	2	13	6
Limpopo			1
North-West		2	2
Northern Cape			1
Western Cape	6	4	3
Gauteng	1	5	14
Eastern Cape		1	2

Source: DPO

9.3 Production and consumption

Production

Figure 9.1 shows the hectares planted with dry beans since 1980/81. On average the area planted is approximately 60,000 hectares with a standard deviation of nearly 12,000 hectares. The large standard deviation confirms what is depicted in Figure 9.1, namely, large variations over time in the area planted. There might be a number of reasons for this. The main reason is probably the favourable prices received for other grain crops, which are also easier to produce and are subject to lower input costs.

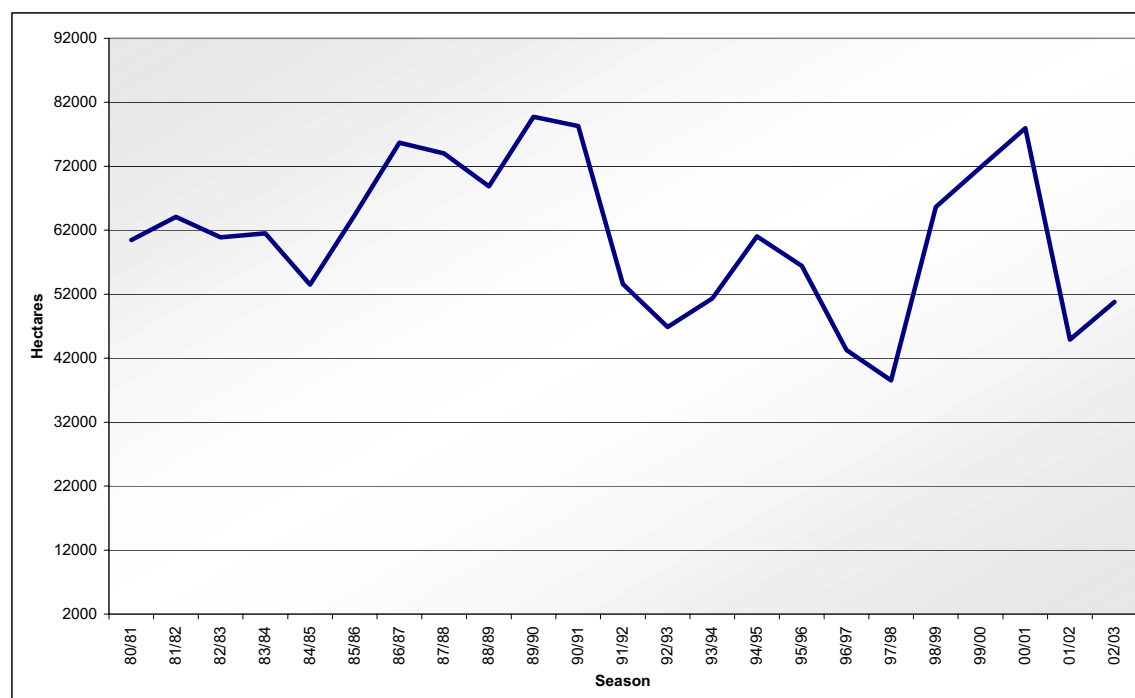


Figure 9.1: Number of hectares planted (1980/81 to 2002/2003)

Source: NCEC

Figure 9.2 shows the production of dry beans. Production averaged approximately 64,000 tonnes per annum, but this varies considerably per annum as depicted in Figure 9.2.

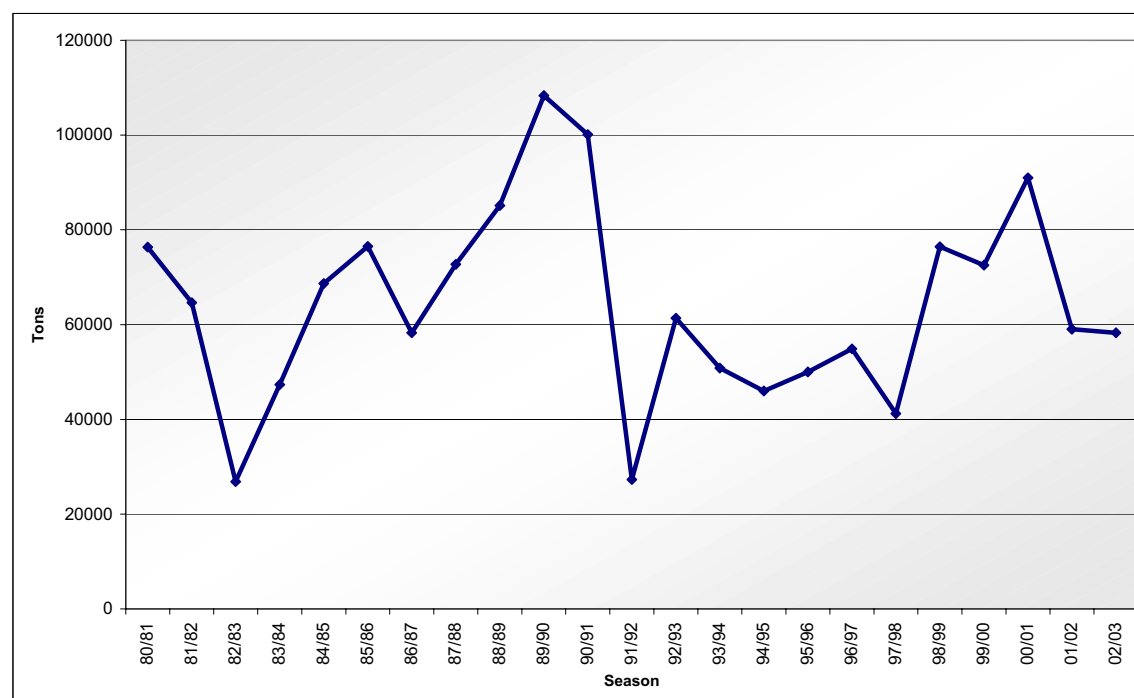


Figure 9.2: Production of dry beans (1980/81 to 2002/03)

Source: NCEC

Table 9.4 and 9.5 show the areas planted and the production for the different varieties of dry beans in South Africa. Red Speckled beans are by far the most important variety. Over the last couple of seasons, it made up between 66 and 85% of plantings. The total production followed the same trend, with figures of between 67 and 87%.

Table 9.4: Area planted per variety (1998/99 to 2002/03)

Type	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003
	Hectares				
Red Speckled	51029	53222	60546	27988	43380
Small White Canning	6678	7628	9954	6637	3920
Large White Kidney	4000	5095	5000	5998	2314
Carioca and other	3928	2816	2500	1462	1425
Total	65635	68761	78000	42085	51039
Red Speckle as % total	77.7	77.4	77.6	66.5	84.9

Source: DPO

Table 9.5: Production per variety (1998/99 to 2002/03)

Type	1998/1999	1999/2000	2000/2001	2001/2002	2002/2003
	Tonnes				
Red Speckled	59636	57315	72051	34985	52056
Small White	7746	8880	10949	8628	4312
Kidney	4480	3000	5000	6697	2000
Carioca and other	4556	3343	3000	1754	1710
Total	76418	72538	91000	52064	60078
Red Speckle as % total	78.0	79.0	79.2	67.2	86.76

Source: DPO

Consumption of dry beans

In general, it appears that the per capita consumption of dry beans has stabilised around 2.5 to 2.6 kg per head since 1996. The total dry bean consumption ranges between 105,000 and 110,000 tonnes per annum and has been fairly stable over the last four years.

9.4 Price trends

Figure 9.3 shows a comparison of prices, expressed as indices, of different grains (summer grains, winter grains and dry beans). In general, prices have moved in the same direction since 1995, probably because most of the factors that influence grain prices have had a similar impact on all grains, such as the climate and the exchange rate. Nevertheless, it is also important to take into account that prices of dry beans, and specifically maize, may move in the opposite direction during a particular season. For example, high maize prices in a previous season may result in large plantings of maize in the current season, which together with favourable climatic conditions, may, in turn, result in surpluses and, hence, low prices.

As mentioned earlier, farmers tend to alternate the areas cultivated between maize and dry beans; this is particularly true for those farmers that plant both crops in a particular season. Thus, an increase in the area planted with maize translates, on average, in lower plantings of dry beans, which in turn leads to a lower supply of dry beans and, hence, an upward pressure on the price for dry beans. Naturally, the opposite is also true. Due to the level of aggregation of prices, the aforementioned relationships may not be that clear in Figure 9.3.

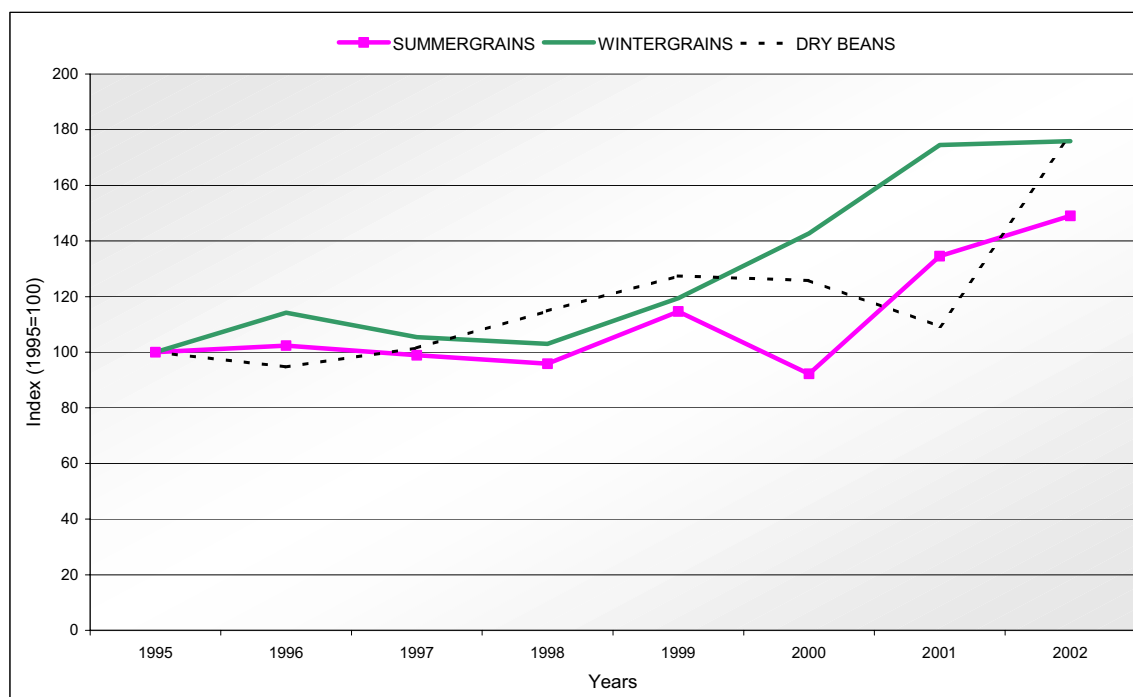


Figure 9.3: Producer prices of different grains versus that of dry beans (1995 – 2002)

Source: AMT

Figure 9.4 depicts the average monthly price of Red Speckled Beans over the past three seasons; it indicates the seasonal trend in dry beans in terms of the prices of Red

Speckled Beans. The graph shows the same seasonal trends that are normally observed for most summer grains and oilseeds. The months March to June usually exhibit low prices for reason that the crop is harvested, and, hence, availability is not a problem. As the season progresses towards planting for the next season, prices tend to increase and will reach a peak in December, after which prices tend to slide again as more information becomes available on the expected availability of the crop.

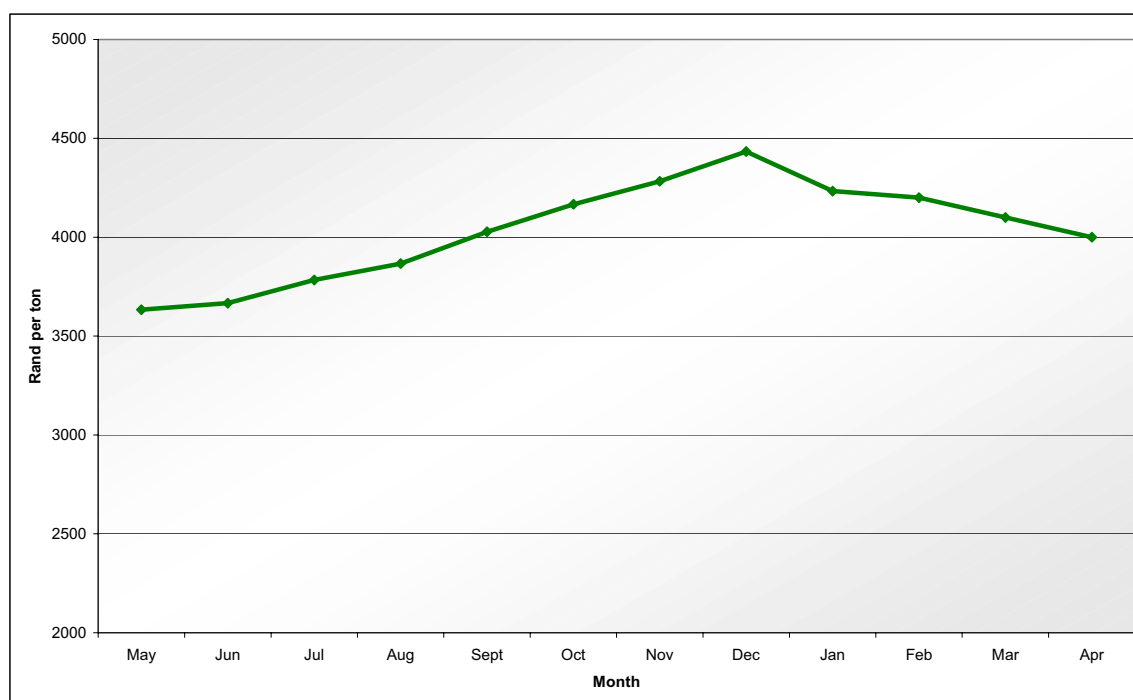


Figure 9.4: The average monthly price of Red Speckled Beans over the last three seasons
Source: DPO

The nominal and real weighted average dry bean producer prices are reflected in Figure 9.5. The nominal prices show a steady increase over the period with the most notable increase occurring from 2001 to 2002. Real prices on the other hand, on average, moved sideways; at the same time, they showed a significant increase from 2001 to 2002. This increase in nominal and real prices from 2001 to 2002 can probably be explained by the significant depreciation of the Rand exchange rate against all major currencies. The higher maize prices also resulted in fewer hectares planted with dry beans, which created short supply in the domestic market in 2002.

The relation between the producer and import parity price of Red Speckled Dry Beans and the exchange rate is depicted in Figure 9.6. It is clear that the domestic prices followed the import parity price closely, but during the latter part of 2001 up to June 2002 the import parity price was significantly higher. The producer price experienced a significant correction at the end of 2002. Since the exchange rate is holding its ground against the major currencies, prices may decline further in the current season. Cognisance should be taken, however, that international prices are expected to increase in the next couple of months as result of shortages in Canada and the USA, which in turn may support prices on the local market.

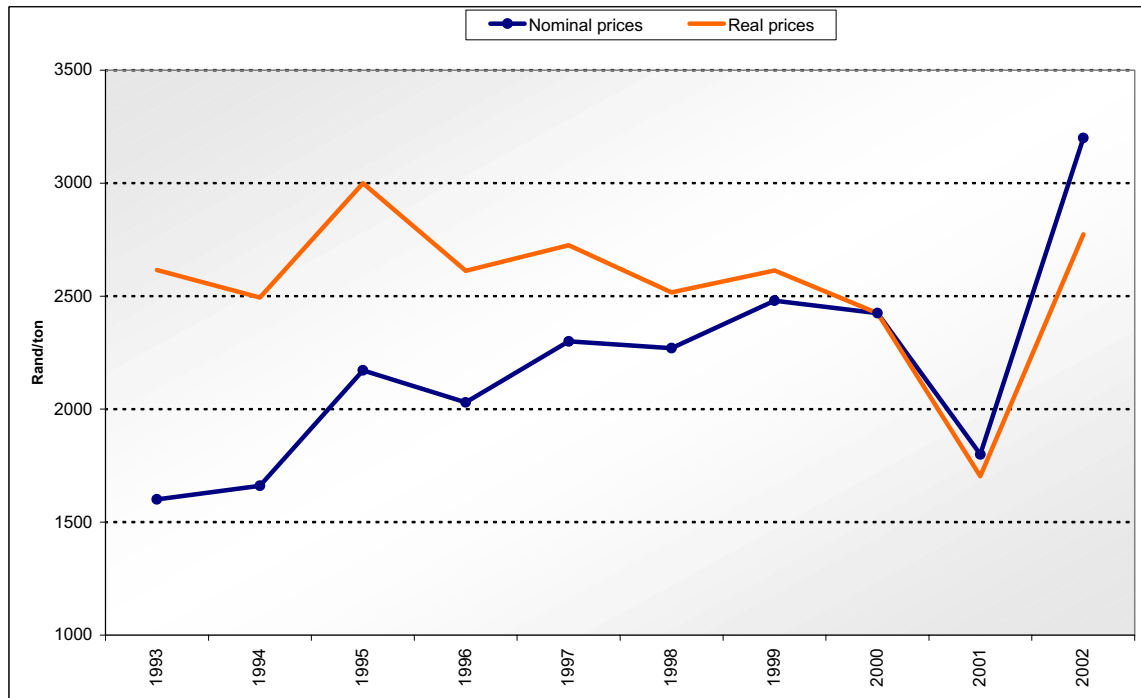


Figure 9.5: Nominal and real weighted average dry bean price (1993 – 2002)

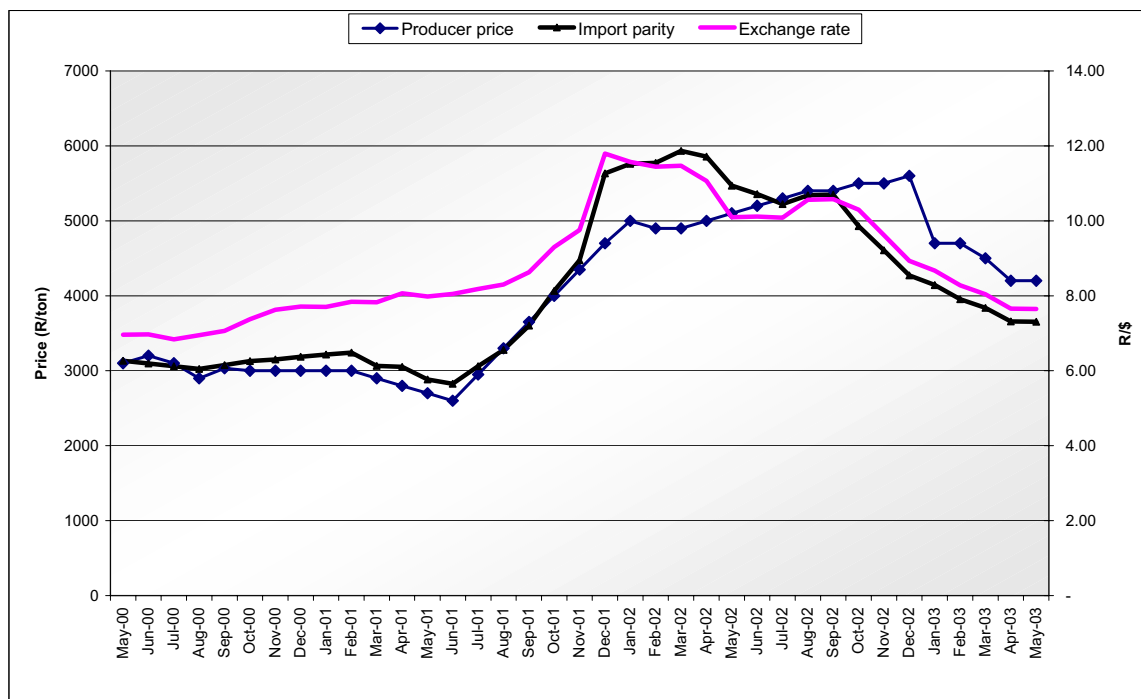


Figure 9.6: The producer and import parity price of red speckled beans versus the exchange rate

Source: AMT

Figure 9.7 shows the exchange rate and the shelf price of dry beans. There is no clear correlation between the shelf prices of dry beans and the exchange rate, but they appear to respond with a time lag. This may have been caused by the fact that retailers took a ‘wait and see approach’ in respect of producer prices, which, as it turns out, continued to increase for several months. The sharp increase in shelf prices after February 2003 needs

further investigation, since producer prices continued to decline after December 2002, and the exchange rate held its ground against major currencies.

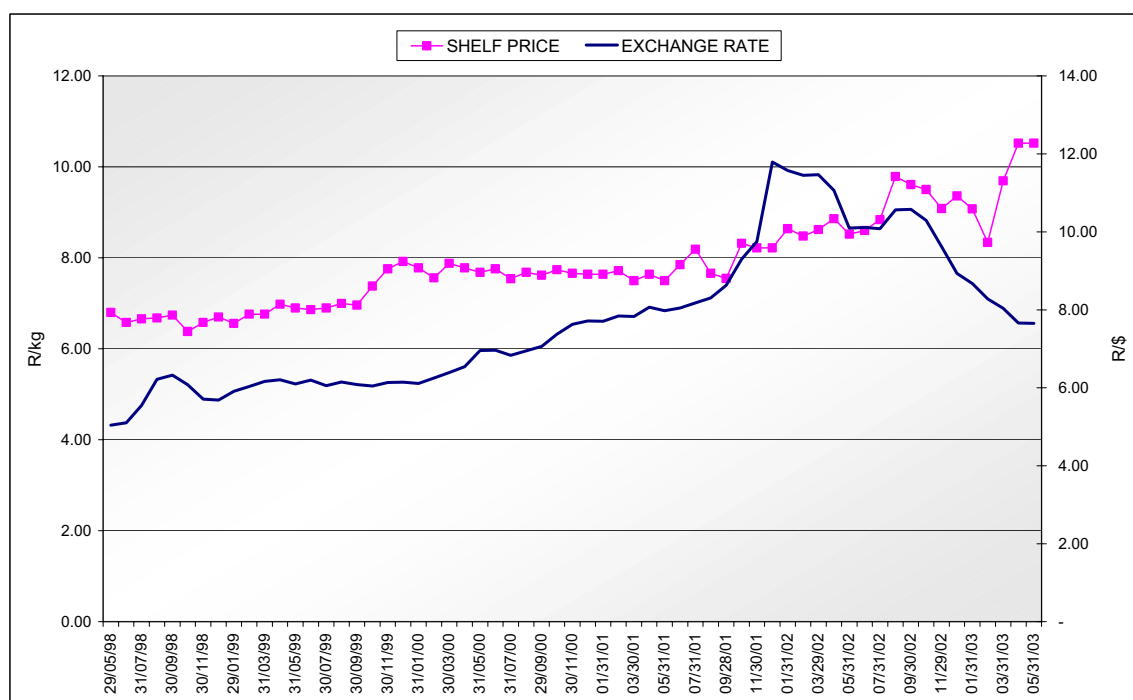


Figure 9.7: A comparison between the shelf price of dry beans and fluctuations in the exchange rate

Source: DPO & AMT

Figure 9.8 shows a comparison between the shelf and producer price of Red Speckled Beans. The calculated average annual growth rates for shelf and producer prices are respectively 1.04% and 2.23%. On average, the Red Speckled Beans shelf prices are 109.8% higher than the producer prices. The standard deviation amounts to 43.4%, which is relatively high. This is an indication of poor consistency in terms of the average difference between shelf and producer prices.

The two lines on this graph (figure 9.8) illustrate the shelf price of dry Speckled Beans and the producer price of the same product. The producer price of Red Speckled Dry Beans as a percentage of the shelf price increased since 2001 at a much faster pace than the shelf price. The producer price of dry beans increased quite smoothly until the end of 2002 but moved sideways and has decreased since then. The shelf price, on the other hand, increased in line with that of the producer price, but made quite an upward leap in the first months of 2003. The widening gap between the producer and retail prices is a concern. The drop in the producer prices is largely a consequence of cheaper imports from China in combination with the normal seasonal trend in the early part of the year. The increase in retail prices of dry beans can partly be explained by a time lag effect as manufacturers and distributors still pass on the previous higher prices of December 2002. Since May 2003, retail prices have been flattening off, which indicates some improvement in price levels.

The producer price of speckled dry beans increased with 86,66% when the price of January 2001 is compared with that of December 2002. The shelf price shows a totally different picture with an increase of only 22,55% for the same period. The price of the

two products (producer price and shelf price) is more in line with each other when January 2001 is compared with May 2003 and the increases are 28,5 and 27,4%, respectively.

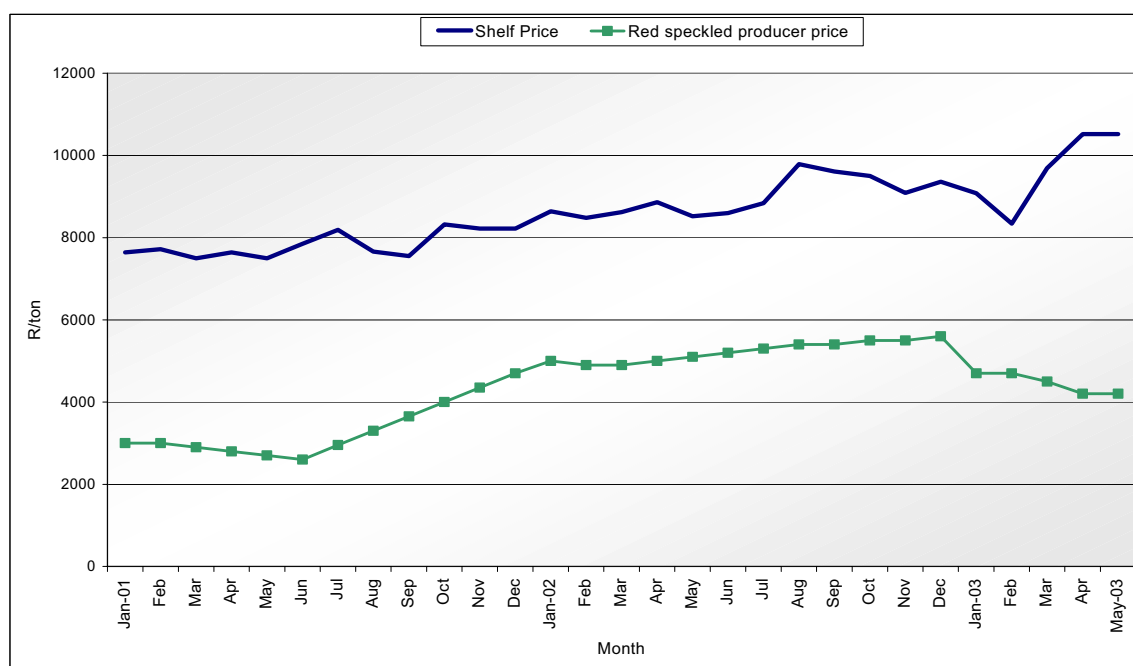


Figure 9.8: The retail (shelf) and producer price of red speckled beans

Source: DPO, A C Nielsen & AMT

9.5 Imports of dry beans

Figure 9.9 shows the relation between production and imports. It is clear that there exists a negative cyclical trend between the two variables.

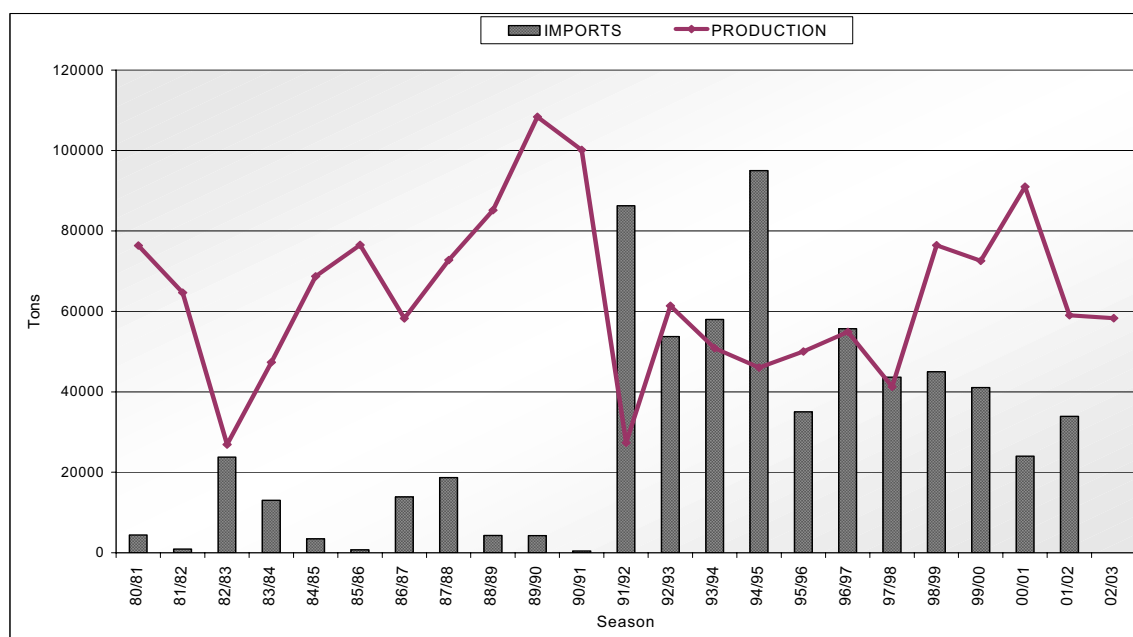


Figure 9.9: The relation between imports and the production of dry beans

Source: AMT

9.6 Unpacking the dry bean supply chain

Table 9.6 shows a typical farm-retail price spread for dry beans. This breakdown of the cost within the supply chain is based on a number of assumptions. For example, the scale economies may differ substantially between different processors, which will affect the cost of value adding. The distances travelled will also differ widely depending how far the different role players are located from each other.

Table 9.6: A typical farm-retail price spread for dry beans

<u>PRODUCER</u>	Unit cost (R/ton)	Accumulated cost (R/ton)
Price of the product	5 600	5 600
Transport cost to buyer	200	5 800
<u>BUYER/BROKER</u>	5 800	5 800
Bank costs (statements/overdrafts, etc)	35	5 835
Cleaning	200	6 038
Waste (3% of the gross price)	174	6 212
Packaging (50 kg @ R2/bag)	40	6 252
Marketing costs (5% of gross price)	290	6 542
Investment costs	400	6 942
Terms to buyer (1 month interest)	175	7 117
Margin/profit (5%)	116	7 233
<u>WHOLESALE</u>	7 233	7 233
Transport cost	150	7 383
Packaging (1 kg @ R0.20/bag)	200	7 583
Cleaning	100	7 683
Storage /handling	30	7 713
Marketing costs (4% of gross price)	289	8 002
Margin/profit (7%)	506	8 508
<u>RETAILER</u>	8 508	8 508
Packaging (500gr @ R0.05/bag)	100	8 608
Marketing costs (2,5% of gross price)	209	8 817
Margin/profit	543	9 360
Average monthly retail price		9 360
Average monthly producer price		5 600
Producer share of retail price of dry beans		59.8%

Source: Different role-players

The prices of the four main levels within the supply chain have been listed as the average producer price, the buyer/broker's price, the wholesale price, and the consumer price. Only the producer price and the consumer price are actual prices that were obtained from the DPO and the AC Nielsen database, respectively. The remaining information was obtained from various different industry experts.

9.7 Conclusions

The price trends in the previous graphs illustrate the trends very clearly. The price of both the producer as well as shelf price showed the same trend with a slight upward movement. The strong upward trend of the shelf price in late 2003 is a worrying factor. As was the case with other commodities, the price of dry beans is derived from the international price as the markets opened up, and producers are now in competition with their counterparts in other countries.

Different graphs in this Chapter have illustrated the prices of dry beans on a monthly and yearly basis. Based on the data, the conclusion is that dry bean prices are not as volatile as the prices of maize and some of the other commodities. Now that the price is determined by supply and demand, it tends to be more volatile, as was mentioned above. Availability is an important issue and most buyers and processors tend to buy their requirements on the domestic market before exploring elsewhere. Because the price is fixed in a free market environment, a definite cycle is clear, and, as in the case of most other commodities, the price of dry beans is normally at its lowest level during planting time and can be expected to peak towards December of each year, depending on import quantities and landed costs as seen in relation to the Rand/Dollar exchange rates applicable.

The South African domestic market produced between 42,000 (lowest) and 92,000 tonnes (highest) of beans in the last eight years with an annual average of $\pm 60\,000$ tonnes. The average imports for the same period were in the region of 50,000 tonnes. This means that local production supplied just over 50% of the local requirements. The total domestic demand varied in the last couple of seasons between 110,000 and 114,000 tonnes. In other words, the domestic market is very dependent on imports and the international price of dry beans plus the exchange rate, thus, plays an important role in the determination of prices on the domestic market.

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