Determining the market share of improved common bean varieties traded in selected markets in Malawi

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Abstract:

The paper reviews the market share of improved bean varieties in Malawi. An assessment of the market share of old improved varieties and new improved varieties that are preferred by the consumers is discussed. The seasonal and regional variations among commonly traded varieties are identified, and alongside the consumers of commonly traded bean varieties. A comparison of the average buying and selling prices of improved and local bean varieties and observed seasonal variations is also carried out.

A total of 28 bean varieties were traded of these 10 are dominant across the regions and were commonly bought by households, local traders, schools, hospitals, and exporters. The average market share (n terms of quantity purchased by traders) of improved common bean varieties was 80% while that of local bean varieties was 20%. Newly improved common bean varieties accounted for 12% of the 80% share of improved bean. Bean varieties dominated the seasons and regions on the basis of their availability in the market. The varieties also attracted high and low prices on the basis of their percentage volume in the market. Availability and sales corresponded to the harvest and hunger seasons, with trade volumes lowest during the harvest seasons in April to May marketing seasons and highest in hunger seasons of September and October. The average selling prices of both improved and local bean varieties exceeded the corresponding buying prices, indicating that traders make profits from the sell of both categories of bean varieties. Basing on prices alone, the findings imply that traders benefit more from the sale of improved varieties as opposed to local variety sales.

Key words: improved bean varieties, local bean markets, market share

Common bean (*Phaseolus vulgaris* L.) is an important food crop providing essential amino acids and proteins to human beings. Among grain legume crops, it ranks second to

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groundnuts in terms of area planted and quantity produced in Malawi (Mazuma,*et al*., 2004). It also provides a good source of income for many Malawians. The crop is grown throughout Malawi (in the north, central and southern regions) that lie within 1000 and 1700 meters above sea level, with annual rainfall ranging from 800 to 1500 mm. Common bean is grown by over 80% of the Malawian farming population. It is commonly grown by smallholder farmers (especially women) and in various cropping systems [e.g., pure cropping, mixed cropping (often including maize), relay cropping (usually after maize), in 'dimba' gardens (to take advantage of residual moisture), under irrigation (especially after rice), and in alleys of tree crops] (Chirwa et al. 2007).

The total land area allocated to common bean in Malawi in 2006 was 210,000 hectares and the total production of common bean was 80,000 tonnes, implying a mean yield of about 381 kg ha^{-1}(FAO, 2008). This mean yield is much lower than the potential common beans yield of 2000 kg ha^{-1} under well-managed research plots. Several factors constrain the production of common bean under smallholder farm conditions in Malawi. The most important of these are recurrent droughts and insect pests and diseases; especially common bacterial blight (CBB), angular leaf spot (ALS), bacterial brown spot (BBS), halo blight (HB), anthracnose, and rust (Mazuma *et al*., 2004).

In an effort to improve bean production in Malawi, the bean improvement programme at Chitedze in collaboration with Bunda College of Agriculture, conducted a series of research activities which resulted in the release of several improved bean varieties. The improved varieties offer resistance to important diseases, are tolerant to low soil fertility, and possess desirable seed and plant characters (Chirwa *et al., 2007)*. The BIP also initiated a common bean seed strategy whose aim was to ensure that large numbers of improved varieties available in the country were being accessed by smallholder farmers. The strategy included seed multiplication through the use of smallholder farmers and seed distribution through grocery shops, rural traders, extension agents, health clinics, and NGOs. The other key element of the strategy was intensified common bean variety promotion through publicity (using posters, leaflets, brochures, and radio messages) in close collaboration with farmers, NGOs, extension agencies, village traders and various other institutions (Chirwa and Aggarwal, 2000).

In a report on farm level impacts and adoption of improved bean varieties in Malawi, 93% of farmers in the bean growing areas in the Northern, Central and Southern regions grew at least one of the improved varieties released between 1985 and 2005. Based on farmer estimates, 25% of the total annual household income in 2005 was attributed to improved bean varieties. In the same year 68% of 529 sampled households sold beans, and the average farmer earned between MK 9000 and MK 12000 (82-91 US$) from beans (Kalyebala *et al*., *2007*); indicating that beans contribute towards the incomes of subsistence farmers. As a follow up to these farm level achievements it became necessary to investigate the contribution of the improved bean varieties to the local bean trade.

In 2007, a study was therefore initiated by the Pan African Bean Research alliance, the Southern Africa Bean Research Alliance and in collaboration with the BIP to assess the market shares of improved and local common bean varieties that were locally traded in

Malawi. The study also aimed to establish the market share of old improved varieties of common beans (i.e. varieties that were released before 2002) with that of the new improved varieties of common beans (i.e. varieties released between 2002 and 2005) and determine the seasonal and regional price variations among different varieties commonly traded in local markets in Malawi.

Methodology

The study was conducted in the northern, central and southern regions of Malawi. A multi-stage stratified sampling procedure was used to select districts, markets and traders. First, six districts were purposively selected for being major bean growing areas. These were; Dedza and Lilongwe from the central region, Mzimba and Rumphi from the Northern region, Balaka and Thyolo from the Southern region. Secondly, thirteen major bean markets were purposively selected. These were: Bembeke and Chimbiya (Dedza district); Mitundu and Msundwe (Lilongwe district); Ekwendeni and Jenda (Mzimba district); Bolero and Rumphi (Rumphi district); Balaka, Liwonde and Mangochi (Balaka district); Bvumbwe and Thunga (Thyolo district). Finally, simple random selection was used to obtain a sample of 60 common bean traders, and these formed the the primary data used for the study.

Survey data were collected from a one-time visit to each market using pre-tested semi-structured questionnaires. Information was collected for two marketing seasons (April to May)and (September to October) for 2006 and 2007 on the common bean varieties traded, common bean prices, volumes of common beans traded and the categories of consumers, among other data. The collected data was processed and analyzed using Statistical Package for Social Scientists (SPSS) version 12.0 and Microsoft Office Excel 2003. Descriptive statistics and simple linear regression analysis were carried out in line with the study objectives.

Single-equation regression models for establishing the relationship between a dependent variable and an independent variable can be derived from the consumption function (Gujarati, 2004). The econometric models for the quantity of beans marketed were estimated using the equation; $Y = \beta_1 + \beta_2 X + u$
Where;
Y = quantity of beans marketed (Kg)
β_1 and β_2 represent the unknown non-random regression parameters
μ = random error, which represents all those factors that affect demand and supply of beans but are not taken into account explicitly.

Common bean varieties traded in the survey markets

A total of 28 different bean varieties were traded in the three survey regions of Malawi. The number of bean varieties traded per region ranged from 13 (in the Southern region) to 18 (in

the Northern region), with a mean of 15 across regions. Out of the 28 varieties, 16 were improved, of which five varieties were new while 11 varieties were old.

Among the new improved common bean varieties, the most dominant ones in the Southern and Central region were Kabalabala (63.3%) and BCMV-B4 (20%). In the Northern region, Kholophethe (21.7%) as well as Kabalabala were the most frequently traded new improved varieties of common bean. In the category of old improved varieties, Phalombe (66.7%) and Napilira (45%) were popular in the Central and Southern regions, while in the Northern region, Maluwa (28.3%) and Kalima (23.3%) dominated. The attributes of the commonly traded new and old improved bean varieties are presented in Table 1. Both the new and old improved bean varieties have high yield potential ranging from 1500 to 2500 Kg/ha. These yield potentials are clearly higher than that (381 kg/ha) based on the FAO 2008 literature. The improved varieties are also tolerant to major production constraints. For example, they are resistant to diseases such as bean common mosaic necrotic virus, black root rot, angular leaf spot, common bacterial blight, and rust. Some of the improved varieties are also adaptable to poor soils (low N and low P) and have the capacity to withstand drought.

Table 1: Exempt of frequently traded new and old improved bean varieties and their attributes

Variety name	Source	Year released	Seed size and color	Reasons for which developed	Yield potential (kg/ha)
Frequently traded new improved common bean varieties					
BCMV-B2	University of Malawi	2005	Small Brown	Resistant to BCMN and Bean Common Mosaic Necrotic Virus (BCMNV)	2500
BCMV-B4	University of Malawi	2005	Medium Cranberry	Resistant to BCMN and Bean Common Mosaic Necrotic Virus (BCMNV)	1500-2000
BC-D/O (19)	University of Malawi	2005	Medium Cranberry	Resistant to BCMN and Bean Common Mosaic Necrotic Virus (BCMNV)	2000
Kabalabala [UBR (92) 25]	CIAT	2002	Small White canning type	Resistant to black root rot and BCMV and adaptable to poor soils	2500
Kholophethe [Sugar 131]	CIAT	2002	Medium Cranberry Sugar	Resistant to ALS and CBB and is adaptable to low soil fertility conditions	2000
Frequently traded old improved common bean varieties					
Maluwa CAL113	CIAT	1995	Medium Red Speckled	Resistance to angular leaf spot, and common bacterial blight. Tolerant to low soil fertility (low N and P) and drought	2000
Napilira CAL143	CIAT	1995	Medium Red Speckled	Resistance to angular leaf spot, Halo blight, anthracnose, rust, common bacterial blight and Powdery Mildew. Tolerant to low soil fertility (low N and P)	2000
Mkhalira A344	CIAT	1995	Small Tan/Khaki	Resistance to angular leaf spot, anthracnose, rust, and common bacterial blight.	2500

				Tolerant to low soil fertility (low N and P) and drought	
Phalombe (25-2x8-7)	Local landrace	1993	Large Red Kidney		1500
Kalima	CIAT	1993	Large red mottled	Resistant to rust	2000

Source: Survey data, 2007

Types of traders involved in common bean trade

Three types of traders (retailers, wholesalers, and retailers/wholesalers) were involved in the common bean trade in Malawi. Retailers were popular in the Northern and Southern regions, wholesalers were dominant in the Central region, whereas traders who doubled as wholesalers and retailers were frequent in the Northern region. Across the three regions, retailers dominated the common bean market. Out of the 60 traders surveyed, 65% were retailers, followed by wholesalers (20%) and traders who doubled up as wholesalers, commonly observed in the North were (15%). Traders who double up as wholesalers and traders reflects fluctuations in the quantities of beans procured where traders fail to procure large volumes of common beans, sufficient to attract whole sale prices (Chilongo *et al.,*2004).

Consumers of frequently traded bean varieties in local markets in Malawi

The common bean was purchased by households, local traders, schools, hospitals, and exporters. Most of the traders reportedly sold their beans to households (56.5%) and fellow local traders (55.3%). Relatively fewer traders sold beans to exporters (24.7%), schools (18.7%), and hospitals (12.2%). Expectedly, the percentages do not add up to 100% because of the multiple responses (traders were selling beans to more than just one category of consumers). The observation made was that households and local traders bought all the 10 commonly traded varieties available in the market. Schools bought seven out of the 10 commonly traded bean varieties. Schools in the Central region purchased five bean varieties (*Kabalabala*, *Phalombe*, *Nanyati*, *Napilira* and *Mkhalira*) while in the southern region they purchased only one variety (*Phalombe*). In the northern region schools purchased 3 varieties (*Kabalabala*, *Maluwa*, and *Phalombe)*. Likewise, out of the 10 commonly traded bean varieties, only three *Kabalabala*, *Nanyati* and *Napilira* were purchased by exporters in the central region. This information is valuable to traders in targeting specific varieties to the right categories of buyers.

Consumer preferences that influence traders' choice of common bean variety

Traders will choose to trade varieties that respond to consumer preferences. These consumer preferences are a function of a range of characteristics broadly classified as visual, cooking and eating habits (Lynam *et al*., 1991). Observations reveal that in addition to the visual, cooking and eating habits, factors related to production and growth factors guided traders choice of varieties. Across the three regions, consumer preferences that largely influenced the traders' choice of variety were short cooking time (53.5%), good taste (44.2%) and high yield (58%). Short cooking time applied amongst traders in all regions, good taste was

common amongst traders in 2 regions (northern and central) while high yield was observed only amongst traders in the south. Other factors observed amongst traders at a lower scale were emission of a nice aroma during and after cooking in the Northern region and early maturity in the Northern and Southern regions. Traders traded varieties that best responded to the consumer preferences. In the Northern region these were *Kabalabala*, *Kholophethe*, *BCMV-B4*, and *Nanyati; in the Central region these were Napilira, Nanyati, Kabalabala*, and *Phalombe*; and in the Southern region *BCMV-B4, Mkhalira* and *Phalombe.*

Market shares of improved and local common bean varieties bought by traders

Across survey regions and marketing periods, the average market share (in terms of quantity purchased by traders) of improved common bean varieties was higher (80%) than that of local bean varieties (20%) (See **Table 3**). New improved common bean varieties formed only 12% of the 80% share of improved bean varieties – an indication that the market was dominated by old improved varieties that had received wider dissemination and diffusion since their release. According to Sperling *et al.* (1996), usually the first recipients of seed of new varieties are very few and they often tend to distribute the seed to their best friends, close family members and important neighbors only. This narrow circle of seed dissemination slows down the speed of diffusion of the new varieties among farmers, who are the sole suppliers of common bean to traders.

Table 3: Market share (%) of various common bean varieties bought by traders in Malawi

Category of bean varieties by region	2006 marketing season		2007 marketing season		Average market share (%)
	April–May	Sept–Oct	April–May	Sept–Oct	
Northern region					
New improved	22.4	20.0	31.2	19.7	23.3
Old improved	58.2	60.2	49.2	69.9	59.4
Total for all improved	80.6	80.2	80.4	89.6	82.7
Local varieties	19.2	19.8	19.6	10.4	17.3
Central region					
New improved	1.9	3.9	3.3	3.4	3.1
Old improved	79.2	87.6	85.6	91.2	85.9
Total for all improved	81.1	91.5	88.9	94.6	89.0
Local varieties	18.9	8.6	11.2	5.3	11.0
Southern region					
New improved	7.2	15.8	12.6	8.4	11.0
Old improved	76.8	58.3	38.3	53.1	56.6
Total for all improved	84.0	74.1	50.9	61.5	67.6
Local varieties	16.0	25.7	49.0	38.6	32.3

Source: Survey data, 2007

During the four marketing seasons, traders bought over 1207 tons of beans. While improved bean varieties (old and new) accounted for the largest share (963 tons or 79.8%), the local bean varieties accounted for only 244 tons (or 20.2%). The volume of improved bean varieties purchased by traders continually increased throughout the four marketing seasons,

while that of local varieties slightly increased in the first three seasons but later declined during the September–October 2007, as shown in Figure 1.
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Figure 1: Seasonal trends in volume of improved and local varieties bought
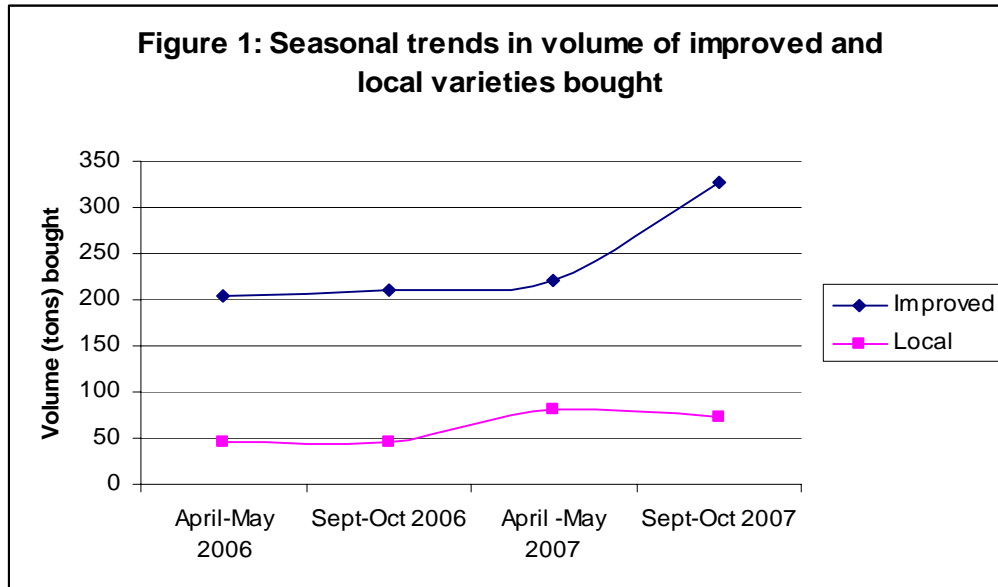
The rainfall pattern in Malawi is uni-modal, common beans are grown in the rainy season from December through March, leading to a bounty harvest in April to May. A second bean crop is produced off the rainy season at a limited scale, either under irrigation, or using residual moisture in low-lying areas. This crop is harvested around September to October. The data shows that the volumes of improved varieties traded was consistently high in both the April to May harvest seasons and the lean season of September to October, indicating the resiliency of the improved varieties to provide for income and food security needs throughout the year. The same cannot be said of local varieties, where the volumes traded fluctuated in response to the two production seasons, with traders trading more of local varieties in the April March harvest season and less volumes in the September to October harvest seasons.

Depending on the region and the marketing season, different common bean varieties dominated the market. However, in some cases there was consistence in the type of the most dominant variety. For example, in the Northern region, *Maluwa* (old improved variety) and *Kabulangeti* (local variety) always commanded the largest market share across all the marketing seasons and among the category of varieties in which they are classified. In the central region, *Phalombe* was the only old improved variety that consistently accounted for the largest market share across the four marketing seasons. In the Southern region, *Kabalabala* constantly had the largest market share among the new improved common bean varieties. **Table 4** indicates the seasonal variations in supply of individual varieties. The variations in market dominance were a result of availability of the varieties in the market. An earlier study by Chirwa *et al.*, (year missing), found out that the volume of bean sales was not related to the individual variety characteristics but rather depended mainly on the availability

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of bean varieties in the market as was observed in the volume of sales. Therefore, traders bought those varieties that were largely available from their suppliers in this case farmers.

Table 4: Seasonal variations in varieties bought by traders in relatively large volumes by region

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons	
	April−May	Sept−Oct	April−May	Sept−Oct
Northern region				
New improved	Kabalabala	Kholophethe	Kabalabala	Kholophethe
Old improved	Maluwa	Maluwa	Maluwa	Maluwa
Local	Kabulangeti	Kabulangeti	Kabulangeti	Kabulangeti
Central region				
New improved	BCMV-B4	Kabalabala	Kabalabala	Kabalabala
Old improved	Phalombe	Phalombe	Phalombe	Phalombe
Local	Nanyati	Nagaga	Nanyati	Nanyati
Southern region				
New improved	Kabalabala	Kabalabala	Kabalabala	Kabalabala
Old improved	Mkhalira	Napilira	Maluwa	Napilira
Local	Nanyati	Nanyati	Nanyati	Nanyati

Source: Survey data, 2007

**Market shares in terms of quantities of common beans sold**

The average market share of improved common bean varieties in terms of quantity sold by traders was much higher (85.2% or 693 tons) versus (14.8% or 120 tons) for local common bean varieties across regions and marketing seasons (see **Table 5**). New improved common bean varieties formed only 13% of the 85% share of improved common bean varieties. During the four marketing seasons, traders sold over 813 tons of common beans. It was noted that the total volume of common bean sold was equivalent to only 67.4% of the total volume of common bean bought by traders, implying that about 32.6% of the common bean purchased by traders were either not sold or not accounted for. This is partly because traders and their families consume/eat part of the stock, retained stock to sale as seed in the next planting season and sometimes hoard commodities to create an artificial common bean scarcity in order to secure price increases.

Table 5: Market share (percent) of different bean varieties in terms of quantity sold

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons		Average market share (%)
	April–May	Sept–Oct	April–May	Sept–Oct	
Northern region					
New improved	28.7	21.3	27.9	20.5	24.6
Old improved	53.8	63.2	55.8	70.6	60.9
Total for all improved	82.5	84.5	83.7	91.1	85.5
Local varieties	17.5	15.5	16.4	8.9	14.6
Central region					
New improved	1.9	2.1	2.0	2.2	2.1
Old improved	88.5	93.8	90.7	94.1	91.8
Total for all improved	90.4	95.9	92.7	96.3	93.8
Local varieties	9.6	3.9	7.3	3.5	6.1
Southern region					
New improved	9.2	18.9	14.6	7.9	12.7
Old improved	68.8	76.0	55.6	56.8	64.3
Total for all improved	78.0	94.9	70.2	64.7	77.0
Local varieties	21.9	5.1	29.8	35.3	23.0

Source: Survey data, 2007

The total volume of improved varieties sold was lowest during the April to May marketing seasons and highest in September and October. This is so because April and May are the main harvesting seasons implying that households mainly depend on their own harvest and hence a reduction in volume of bean sales. On the other hand, September to October seasons characterize the beginning of a food scarcity period in Malawi that falls between January to February and October to December (Andima, 2004). Thus, in response to the increase in demand, in the months of September to October 2007, there was a sharp increase in quantity of common beans sold. In the case of local varieties, the volume sold slightly decreased in the second season and then kept on increasing thereafter (see Figure 2).

Figure 2: Trends in volume of improved and local varieties sold
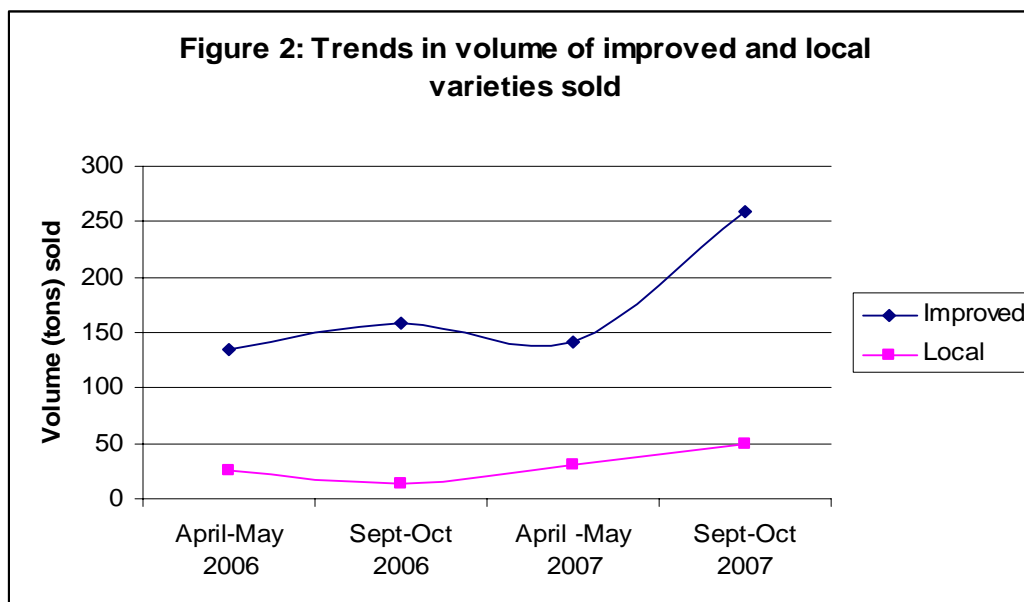
An assessment of the sales of new and old varieties is an indication of the choice of consumers across the three regions and within the various marketing seasons. Findings indicate variations in varieties dominating the market across seasons. However, in some cases there was consistence in the type of the most dominant variety across the four marketing seasons. Varieties that continually accounted for large market shares were *Maluwa* in the Northern region, *Phalombe* and *Nanyati* in the Central region, and *Napilira* and *Nanyati* in the Southern region. Table 6 gives a list of varieties that were highly demanded across the different marketing seasons and regions. The most important explanation to variations in the most predominantly sold bean varieties is availability of the variety in the market. According to Chirwa *et al.* year missing), availability of the bean variety is the major determinant of what varieties consumers will buy. Consumers will tend to buy those varieties that are readily available in the market.

Table 6: Regional and seasonal variations in varieties sold in relatively large volumes

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons	
	April–May	Sept–Oct	April–May	Sept–Oct
Northern region				
New improved	Kabalabala	Kholophethe	Kabalabala	Kholophethe
Old improved	Maluwa	Maluwa	Maluwa	Maluwa
Local	Nyauzembe	Kabulangeti	Kabulangeti	Kabulangeti
Central region				
New improved	BCMV-B4	Kabalabala	Kabalabala	BCMV-B4
Old improved	Phalombe	Phalombe	Phalombe	Phalombe
Local	Nanyati	Nagaga	Nanyati	Nanyati
Southern region				
New improved	Kabalabala	Kabalabala	BC-D/O(19)	Kabalabala
Old improved	Napilira	Napilira	Napilira	Napilira
Local	Nanyati	Nanyati	Nanyati	Nanyati

Average buying prices of improved and local bean varieties

The assessment of prices at which traders purchased common beans from farmers indicates average prices at 78 Malawian Kwacha per kilogram (MK/kg) for improved varieties and at 81 MK/kg for local common bean (**Table 8**). This means, in all regions traders pay higher farm gate prices for local common bean varieties than they pay for the improved varieties, which is also an indication that farmers attach more value to the local varieties than the improved ones. As earlier described, improved common bean varieties have high yield potentials ranging from 1500 kg/ha to 2500 kg/ha. Moreover, these varieties are tolerant to major production constraints that farmers face (refer to **Table 1**). This implies that the improved bean varieties are available in big volume hence attracting low prices. Chirwa *et al.*, (2006) also observed that bean varieties available in big volumes attracted low prices. Buying prices differed depending on the variety, region and the marketing season.

Table 8: Average buying prices of improved and local bean varieties

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons		Average buying price (MK/kg)
	April-May	Sept-Oct	April -May	Sept-Oct	
Northern region					
New improved	43	90	79	106	80
Old improved	58	79	74	98	77
Average for all improved	50	84	77	102	78
Local beans	60	98	85	96	85
Central region					
New improved	67	89	85	126	92
Old improved	75	80	80	114	87
Average for all improved	71	85	83	120	89
Local beans	60	89	58	156	104
Southern region					
New improved	43	69	51	68	58
Old improved	58	82	63	91	73
Average for all improved	50	76	57	79	66
Local beans	60	72	65	78	69

Source: Survey data, 2007
Note: Exchange rate as of August 2008 – 1 USD = 142.55 Malawian Kwacha

Different regions and seasons had different varieties fetching the highest prices to the farmers. Best selling varieties also differed depending on the marketing season. **Table 9** shows the highest priced varieties in each of the four marketing seasons, disaggregated by region and category of varieties. The variations across seasons can be explained by the variations in bean variety availability in the different seasons. The varieties presented in **Table 9** below are available in relatively small volumes hence attracting high prices. A study by Chilongo *et al.*, (2004) revealed that pricing of the beans mainly depended on availability of a given bean variety in the market.

Table 9: Seasonal variations in varieties bought by traders at highest farm gate prices

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons	
	April-May 2006	Sept-Oct 2006	April -May 2007	Sept-Oct 2007
Northern region				
New improved	BC-D/O(19)	BCMV-B4	Kholophethe	BCMV-B4
Old improved	Mkhalira	Kambidzi	Kambidzi	Napilira
Local	Nanyati	Nanyati	Nayuzembe	Nyauzembe
Central region				
New improved	BCMV-B4	Kabalabala	BCMV-B4	BCMV-B4
Old improved	Kalima	Napilira	Mkhalira	Kanzama
Local	Nanyati	Nanyati	Nanyati	Tsekemere
Southern region				
New improved	BC-D/O(19)	BC-D/O(19)	BC-D/O(19)	BC-D/O(19)
Old improved	Mkhalira	Namajengo	Phalombe	Mkhalira
Local	Nanyati	Nanyati	Khunguikocha	Nanyati

Source: Survey data, 2007

Average selling prices of improved and local common bean varieties

The result of an assessment of the prices at which traders in local markets in Malawi sold common bean indicates that the average price (125 MK/kg) at which improved varieties were sold was higher than the average price (123 MK/kg) at which local varieties were sold. This might mean that there is consumer willingness to pay for improved varieties in the same way consumers pay for the established local varieties, whose attributes are well known. However, the data segregated by region, showed that at least in the Northern region local common bean varieties attracted a higher price (132 MK/kg) than improved varieties of common bean (123 MK/kg), which is expected, because consumers require to gain confidence in the product before they become willing to pay dearly for it.

It was also observed that selling prices of the same common bean varieties differed depending on the region of the country. For example, while *BCMV-B4* attracted the highest price in the Central region, it surprisingly attracted the lowest price in the Southern region. This is perhaps due to differences in the transaction costs (buying price, transport costs, market fees, storage costs, handling costs, labour costs, etc) incurred by the traders in the two regions. It's likely that traders in the Central region incurred higher transaction costs than their counterparts in the Southern region. As such, traders in the Central region have to set their prices high so as to recoup the high costs. Carlson and McAfee (1983) attribute price dispersion among homogeneous products to heterogeneous marginal costs. The higher the marginal costs the greater the dispersion. Ville Aalto-Setala (2003) also reported that even if products are perfectly homogeneous, there may be price dispersions in market equilibrium due to imperfectly informed consumers.

Table 10: Average selling prices (MK/kg) of improved and local common bean varieties

Category of bean varieties by region	2006 marketing seasons		2007 marketing seasons		Average selling prices (MK/kg)
	April-May	Sept-Oct	April -May	Sept-Oct	
Northern region					
New improved	61	130	123	160	119
Old improved	76	147	126	158	127
Average for all improved	69	138	124	159	123
Local varieties	73	161	141	151	132
Central region					
New improved	212	248	144	203	201
Old improved	117	107	125	171	130
Average for all improved	164	177	134	187	166
Local varieties	118	162	119	238	159
Southern region					
New improved	61	90	66	101	80
Old improved	76	105	91	113	96
Average for all improved	69	97	78	107	88
Local varieties	73	88	61	90	78

Source: Survey data, 2008
Note: Exchange rate as of August 2008 – 1 USD = 142.55 Malawian Kwacha

It was noticed that common bean varieties that attracted good prices for traders differed depending on marketing season and region. **Table 11** shows bean common varieties with the highest selling price, disaggregated by category of variety (improved and local), marketing season, and region. Selling prices are supposed to send signals to traders in form of incentives (Tomek, 1991). Therefore, holding marketing costs constant, traders are better off engaging in sale of varieties that are associated with high consumer prices.

Table 11: Differences in common bean varieties attracting the highest consumer prices by region and marketing season

Category of bean varieties by region	2006 marketing season		2007 marketing season	
	April-May 2006	Sept-Oct 2006	April -May 2007	Sept-Oct 2007
Northern region				
New improved	Kabalabala	Kholophethe	Kholophethe	Kholophethe
Old improved	Phalombe	Kalima	Sapatsika	Sapatsika
Local	Nanyati	Nanyati	Nyauzembe	Nyauzembe
Central region				
New improved	BCMV-B4	BCMV-B4	BCMV-B4	BCMV-B4
Old improved	Kalima	Napilira	Kalima	Kalima
Local	Nanyati	Nanyati	Tsekemere	Tsekemere
Southern region				
New improved	Kabalabala	BC-D/O(19)	Kabalabala	Kabalabala
Old improved	Phalombe	Namajengo	Phalombe	Sapatsika
Local	Nanyati	Nanyati	Nanyati	Nanyati

Source: Survey data, 2008

Comparing buying and selling prices of improved and local bean varieties

The average selling prices of both improved and local bean varieties exceeded the corresponding buying prices, which might imply that traders make profits from the sell of both categories of bean varieties. However, the difference between the average selling price and the average buying price for improved varieties was higher than that for local varieties by 5 MK/kg (Table 12). This might imply that traders are likely to benefit more from the sale of improved varieties as opposed to local variety sales. Unfortunately, collecting information on marketing costs, which is the basis for computing profits, was outside the scope of this study. Therefore, the inability of the current paper to provide an answer regarding the most profitable varieties is a limitation of this study which could be addressed in a follow-up study.

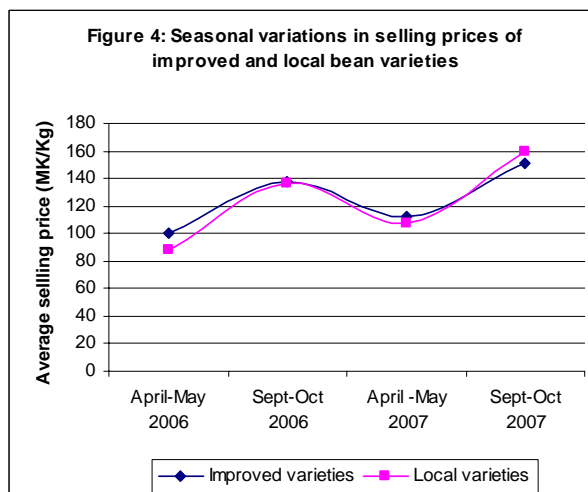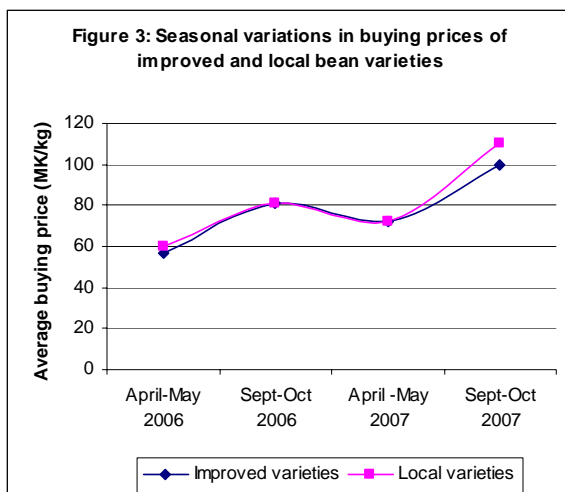**Table 12: Comparison of average prices for improved varieties with those of local varieties**

Average price (MK/kg)	Improved common bean varieties	Local common bean varieties
Selling price	125	123
Buying price	78	81
Difference	47	42

Note: Exchange rate as of August 2008 – 1 USD = 142.55 Malawian Kwacha

Previous records of average selling prices in 2000 identified the average selling price of beans at 110 MK/kg (Andima, 2004). The survey data presented in Table 12 above, notes that the average selling price of beans had risen to 124 MK/kg in 2007, indicating an average selling price increase of 12.7% in a period of 7 years.

Seasonal variations in prices of improved and local bean varieties

Both the average buying and selling prices of common beans varied depending on the marketing season. The average prices of both improved and local common bean varieties followed a similar trend (**Figure 3** and **4**). Traders received the highest prices between September and October, while they got lowest prices during April to May marketing season. One possible explanation to this observation is that the period April to May falls within the harvesting season when beans are in abundant supply, hence causing the prices to be low. On the other hand, the period September to October falls within the dry season when beans are scarce and therefore available to traders in only small quantities, hence leading to a rise in prices (Chilongo *et al*., 2004). The authors further reported that prices were lower soon after harvesting (March to June) but increased (sometimes even more than double) during the dry season and towards the planting time (August to January) and continued to rise until the next harvesting season.

Figure 3: Seasonal variations in buying prices of improved and local bean varieties

Figure 4: Seasonal variations in selling prices of improved and local bean varieties

Relationship between prices and marketed quantities

There was an attempt to establish the relationship between prices of common beans and quantities purchased and sold by traders. A regression was run and results revealed that across the three regions, there was an insignificant (P>0.05) negative relationship between quantity of common beans bought by the traders and the buying prices. This implies that increases in buying prices are not likely to lead to a reduction in the quantity of common beans purchased by the traders. In the Central and Northern regions, only 1% and 4% respectively, of the variations in the quantity of beans bought could be explained by changes in buying prices. The Southern region was slightly different with a relatively higher percentage (11%) of the variations in the quantity of beans purchased by traders which could be explained by changes in buying prices. This finding is so because the quantity of beans bought is also affected by other factors such as availability or scarcity of beans, traders' level of income, taxes levied, transportation costs, and related marketing costs.

Similarly, selling prices had no significant (P > 0.05) effect on the quantity of common beans sold by traders. In the Northern and Central regions, only 0.2% and 0.3% respectively, of the variations in the quantity of common bean sold by traders could be explained by selling prices. In the Southern region, a slightly higher percentage (5%) of the variations in the quantity of common bean sold by traders could be explained by changes in selling prices. Contrary to these findings, according to Bert (2001) and in line with economic theory, market (consumer) price of the commodity is one of the key factors that affect the traders' decision on how much to supply.

Summary
The paper reviews the market share of improved bean varieties in Malawi. The paper presents findings that are especially relevant to ongoing breeding of improved varieties, and the contribution of breeding efforts to the local trade. The paper provides market information on varieties that dominate the market and the driving consumer preferences. This Information is important for guiding breeding strategies and identifying variety traits preferred by consumers. Traders across regions in a country such as Malawi could also derive a wealth of

information from findings related to the diversity of varieties that dominate the regions. The findings inform on the specific varieties that are available in several regions seasonally Choosing to trade across regions to maximize profits could be a profitable option

References

Andima, 2004. Social Impact Assessment of Bush Bean Varieties *(phaseolus vulgaris L.)* on the Livelihoods of Rural Communities in Malawi

Carlson John and Preston McAfee (1983). Discrete Equilibrium Price Dispersion. Journal of Political Economy 91, 480-493.

Chilongo, T. And H. Hunga. (2004). An Investigation of the Demand Characteristics for various Bean Varieties in Malawi. Report Submitted to CIAT-Malawi. Bunda College of Agriculture. University of Malawi. Lilongwe.

Chirwa, R. M.A.R Phiri, P. Kambewa, T. Chilongo and H. Hunga (2006) Factors that Influence the Demand for Beans on Markets in Malawi. CIAT-Africa Research Highlights.

Chirwa, *et a*l, 2007.Experiences in Implementing the Bean Seed Strategy in Malawi. Journal of Sustainable Agriculture, Vol. 29. Pp. 43-69(27)

Chirwa, R.M., And V.D. Aggarwal. 2000. Bean Seed Dissemination Systems in Malawi: A Strategy. Journal of Sustainable Agriculture, Vol. 15(4). Pp. 5-24.

FAO (2008). FAOSTAT. Http://Foastat.Fao.Org/Site/535

Gujarati, Damodar N. (2004). Basic Econometrics, Fourth Edition. The McGraw-Hill Companies.

Kalyebara, R. D. Andima, S. Kazombo Phiri and R, Chirwa (2007). Farm-level Impacts and Adoption of Improved Bean Technologies in Malawi. A CIAT-PABRA Working Document.

Lynam, J.K and Willem Janssen. (1992). Commodity Research Programs from the Demand Side. Elsevier Science Publishers Ltd. England.

Markqraf Bert. (2001). Price, Demand, Costs and Profitability Http://Www.Suite101.Com/Article.Cfm/Small_Business/63645.

Mazuma E.D.L., C.T. Kisyombe, S. Kumwenda, L. Maseko, E. Kabvala, E. Butawo, P. Mviha and C. Kapapa. (2004). Development of Integrated Management for Major Diseases in Common Beans.

Schnepf Randy. (2006). Price Determination in Agricultural Commodity Markets: A Primer CRS Report for Congress. Congressional Research Service. The Library of Congress.

Sperling, L., U. Scheidegger and R. Buruchara. (1996). Designing Seed Systems with Small Farmers: Principles Derived From Bean Research In The Great Lakes Region Of Africa. Agricultural Research & Extension Network, Network Paper No. 60. ODI, London. Tomek W.G., And Robinson K. L. (1991). Agricultural Product Prices. 3rd Ed. Cornell, University Press. London.

Ville Aalto-Setala (2003). Explaining Price Dispersion for Homogeneous Grocery Products. Journal of Agricultural and Industrial Organization. Volume 1, Article 9. The Berkeley Electronic Press (Bepress).