

# Competitive smallholder livestock in Botswana: Results of a livestock value chain survey in the Central district of Botswana



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# Competitive smallholder livestock in Botswana: Results of a livestock value chain survey in the Central district of Botswana

Sirak Bahta, Derek Baker, Baiti Podisi and Orwell Marobela

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# Abbreviations

|       |   |
|-------|---|
| ACIAR | Australian Center for International Agricultural Research |
| BMC   | Botswana Meat Commission                                  |
| BTv   | Botswana Television                                       |
| BWP   | Botswana pula   |
| CEDA  | Citizen Entrepreneurial Development Agency                |
| DMS   | Department of Meteorological Services                     |
| DVS   | Department of Veterinary Services                         |
| ILRI  | International Livestock Research Institute                |
| LAC   | Livestock Advisory Center                                 |
| LIMID | Livestock Management and Infrastructure Development       |
| USD   | United States dollar                                      |

# Executive summary

The main objectives of the snapshot survey in Central District were to:

- Characterize the value chain actors involved with smallholder livestock production;
- Evaluate marketing systems of smallholder livestock keepers;
- Compare results with the recent FAO study and extend them to enterprise level;
- Analyse product quality preferences and retail consumer purchasing demand;
- Identify possible policy interventions to enhance livestock competitiveness.

Producers, butchers, retailers, input suppliers and consumers from Central District were brought together for a workshop and individual survey. The method established can be applied by organizations concerned with smallholder competitiveness and welfare—particularly the Ministry of Agriculture’s Department of Agribusiness Promotion.

Producers’ demographic makeup in the Central District is presented as: predominantly male and with little education; some two thirds under the age of 60; and some 90% are operating on unfenced land. To some extent, these results depart from customary discussion and further clarification is needed—notably by the project’s on-going survey work.

Producers’ channel choices are influenced by lack of information and dysfunctional implementation of LITS. Similarly, input supply offers few possibilities for the private sector due to LAC crowding out. Redesign of LITS is currently underway, and similar steps are needed for LAC.

Marketing is little guided by quality and consumer demand, with even retailers being poorly informed about consumer demand. This indicates a need for information and business management training.

Smallholder herd and flock structure and dynamics are presented by the report, in the most elaborate study of its kind yet attempted. Aspects of herd dynamics depart considerably from common assumptions, notably by both FAO and BIDPA in recent work.

Profitability of smallholder production is markedly different across scales of smallholder operation. However, this is not a simple relationship and is likely to be related to intensification as well as size, as shown by FAO’s recent study. This supports the importance of developing improved feeding systems, particularly grazing for the less intensive production units that could not feasibly use grains. The switch to a weaner production model and boosted feedlot operations is an alternative approach that also requires improved information base, but one that needs substantial promotion to producers.

Evidence emerges of poor information flows concerning product quality, for both live animals and meat, at all stages of the value chain. Although quality incentives are clearly transmitted by BMC for cattle, this does not apply elsewhere in the value chain and not at all to small stock marketing.

The survey method developed should be adopted for short- and long-term data collection by the Ministry of Agriculture’s Department of Agribusiness promotion. Training needs and mechanisms are identified, which together with improved information flows will provide a stronger base for competitiveness.

# Introduction

Botswana's national development goals seek to build on the potential of livestock production in Botswana. The country's climate is characterized as semi-arid, with erratic rainfall. The vast majority of Botswana's 581,730 sq. km surface area is natural rangeland suitable for extensive livestock grazing, especially cattle. Livestock production is a major source of employment, and is surpassed only by mining and tourism as income generator for the country.

Livestock production in Botswana is usually subdivided into commercial (generally, fenced grazing areas) and traditional (generally, communally grazed areas focused on borehole-centred cattle posts) farming. According to Nkhori (2004), more than 80% of all cattle reared in Botswana (about 2.1 million heads) are bred in the traditional system. It is likely that an even greater share of the country's small stock (sheep and goats) is also run in the traditional system. Although the development-oriented term 'smallholder' is not widely used in Botswana, it is likely to have some equivalence to the traditional sector as described above. The smallholder farming system primarily involves cattle and small stock. Goat rearing is thought to be the second largest livestock activity among smallholder farmers after cattle, with most goats bred by smallholder farmers. However, these demarcations are somewhat arbitrary and intermediate structures (e.g. small, fenced grazing units) are readily observed. Moreover, little has been done to characterize these systems so as to identify the opportunities for, and constraints to, improvement of production and marketing so as to benefit smallholders and contribute to development more generally.

Botswana's smallholder livestock farming sector and the country at large face a challenge in exploiting the growing national and regional demand for meat, as well as preferential access to the EU market. In general, incentives for value addition in pursuit of these markets appear limited. There is also limited evidence of innovation in the value chain, particularly for small stock. An observed result is that imported small stock meat (e.g. goat meat) is frequently seen on retail shelves around the country. Meanwhile, as reported by BIDPA (2006) earnings by workers in the livestock sector are significantly lower than in other sectors, especially for communal farming or smallholders.

To identify, understand and utilize the potential benefit for value addition and poverty reduction in Botswana's livestock sector, it is necessary to explore the existing value chains in which livestock products are produced and traded. This includes exploration of the country's markets and how they interact, the roles of key players, and the critical constraints that limit the growth of livestock production and the competitiveness of smallholder farmers. A recent study of cattle value chains (FAO 2013) identified the three core elements of competitive and adaptive beef value chains:

- Capacity of stakeholders;
- Incentive for stakeholders; and
- An enabling environment.

The study's report concludes that these elements are not in place in Botswana's beef production value chain. To authoritatively investigate their degree of development and potential impact—particularly on competitiveness—the current study seeks to validate these findings using a more data-intensive approach to smallholders' activities. Further, the current study extends to the small stock value chains.

This report is conducted as part of the project *Competitive Smallholder Livestock in Botswana*, specifically an activity on rapid appraisal of value chain actors' knowledge, practices, size, and structure. It also provides estimates of their

performance in livestock production and trading. It reports on a pilot ('snapshot') survey which was conducted in two villages (Taupye and Thabala) and one semi urban area (Serowe) in Botswana's Central District. The Central District accommodates the largest number of cattle (49% of all cattle nationwide) of any district. The pilot survey method included farmer focus group discussions and individual interviews of farmers, butcheries, supermarkets and consumers. The main objectives of the snapshot survey were to:

- Characterize the value chain actors involved with smallholder livestock production;
- Evaluate marketing systems of smallholder livestock keepers;
- Compare results with the recent FAO study and extend them to enterprise level;
- Analyse product quality preferences and retail consumer purchasing demand;
- Identify possible policy interventions to enhance livestock competitiveness.

The report is organized into nine sections, dealing in turn with methods and result reporting from the various value chain actors included in the snapshot survey. The final section summarizes the discussion and outlines conclusions reached, offering suggestions on the way forward.

## Value chain map and market channels

In order to understand the livestock value chain, which involves the full range of production, processing and delivery activities required to move a product (e.g. live animals, carcasses or meat products) to final consumers, it is useful to construct a value chain 'map'. This geometric tool facilitates understanding of the key actors and relationships involved in the value chain. Figure 1 represents the Botswana livestock value chain indicating the key actors or stakeholders. Principal cattle market channels involve supply to the Botswana Meat Commission (BMC) and other private abattoirs and butcheries, and the feedlots and production units that primarily supply them. Small stock channels are more diverse.

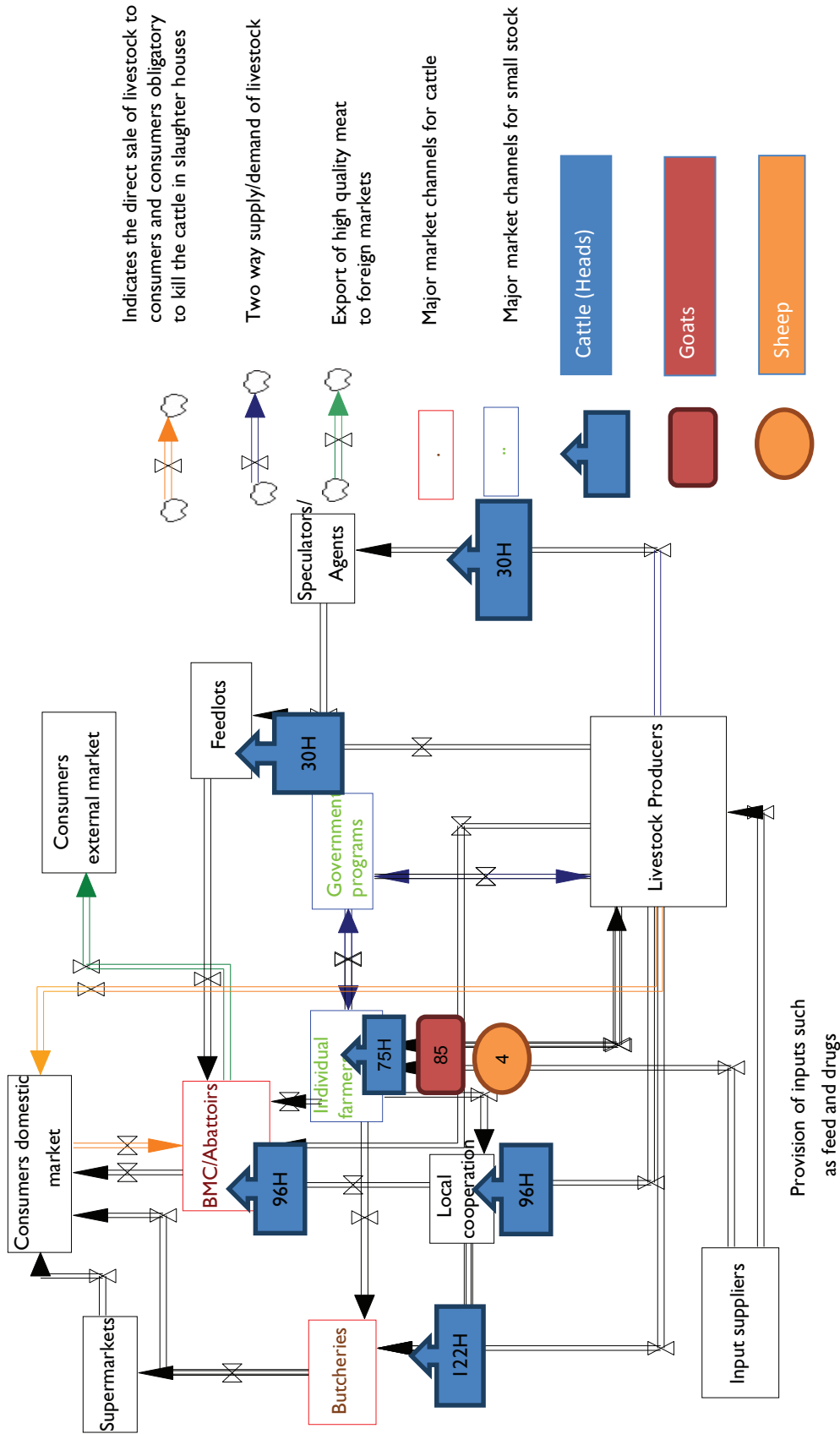
According to group discussions held with farmers, the Botswana Meat Commission (BMC) is the principal market channel for the country's finished cattle and weaners. Butcheries are also a major market channel for farmers to sell their livestock (primarily adult unfinished or cull cattle), particularly in the Central District. Recent data derived from the individual interviews revealed that butcheries (with 122 live cattle supplied from farmers) are the major market, followed by BMC which received 96 live cattle (Figure 1).

Traders and feedlots also buy livestock, at the village level. Farmers often complain about the price they receive from traders' speculative purchases and for sale to other actors. Feedlots are primarily operated by farmers from the commercial sector, some of whom are contracted to buy cattle on behalf of BMC. Farmers also sell their livestock to other individual farmers, traders, and directly to individual consumers.

The government is a major purchaser of livestock, for the purpose of supplying animals to beneficiaries of publicly-funded programs related to youth empowerment, poverty alleviation, and regional development. These primarily focus on small stock. Examples include LIMID (Livestock Management and Infrastructure Development Programme) and CEDA (Citizen Entrepreneurial Development Agency).

Cattle and beef sales by farmers to consumers are rarely direct, except in remote areas. Rather, these occur via butcheries and serve religious rituals, weddings and funerals, as well as household consumption. As indicated by the yellow arrow in Figure 1, livestock slaughter is mandated by public health regulations to occur in registered butcheries, or other registered facilities. Convenience and available home facilities mean that this regulation is rarely followed for small stock.

Figure 1. Indicative livestock value chain in Central District, Botswana

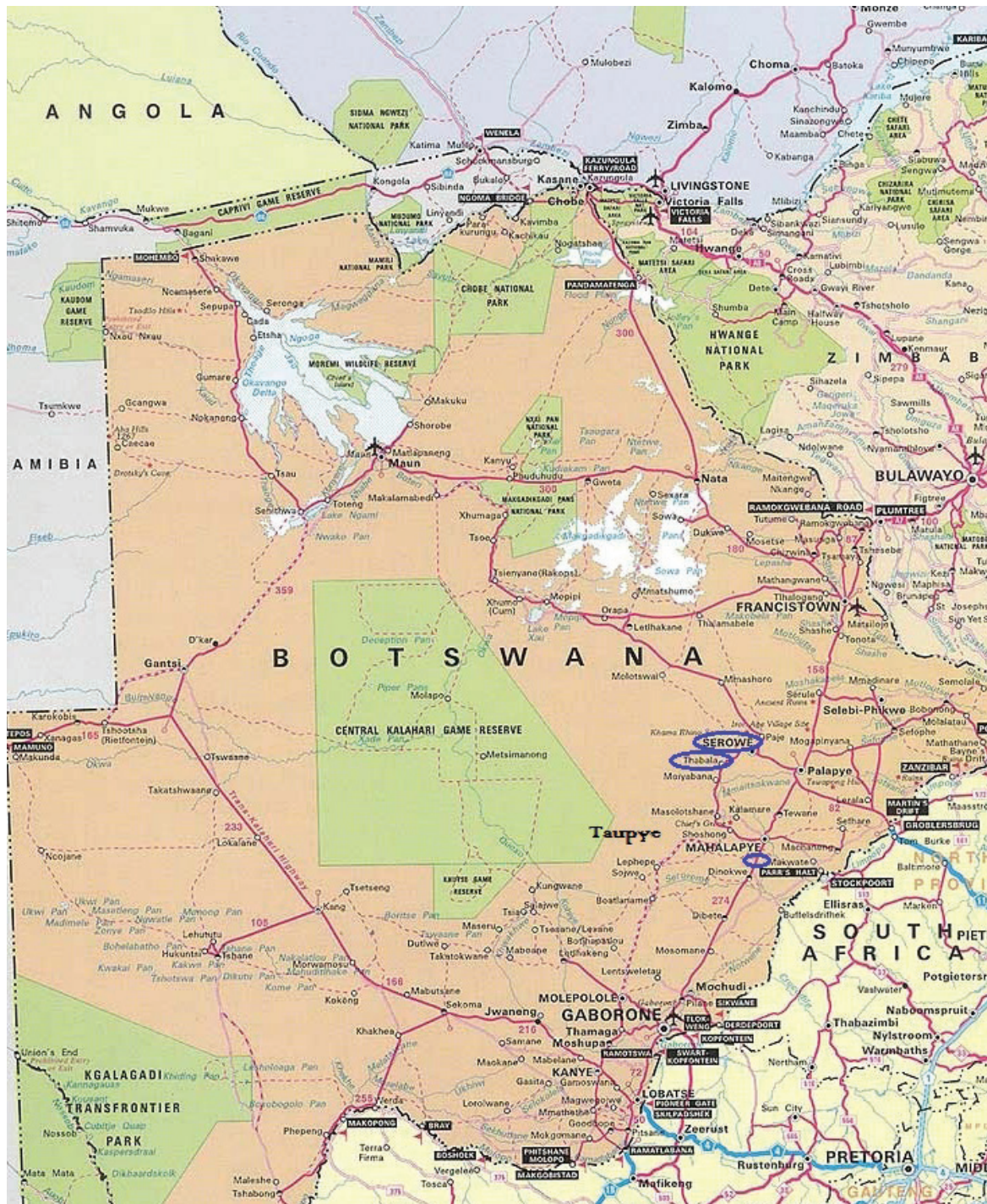




# Farmers' focus group discussion

Focus group discussions, as well as individual interviews with farmers, were held in three locations: Taupye, Thabala and Serowe (Figure 2). Taupye is a small village located 10 kilometres from Mahalapye, a semi urban area well served by service centres and agricultural extension offices. Thabala is a small village located 19 kilometres from Serowe, where the District agricultural office is located. Serowe is a capital urban area located about 300 kilometres from Gaborone.

**Figure 2.** Map of Botswana (the study area identified with blue circles)



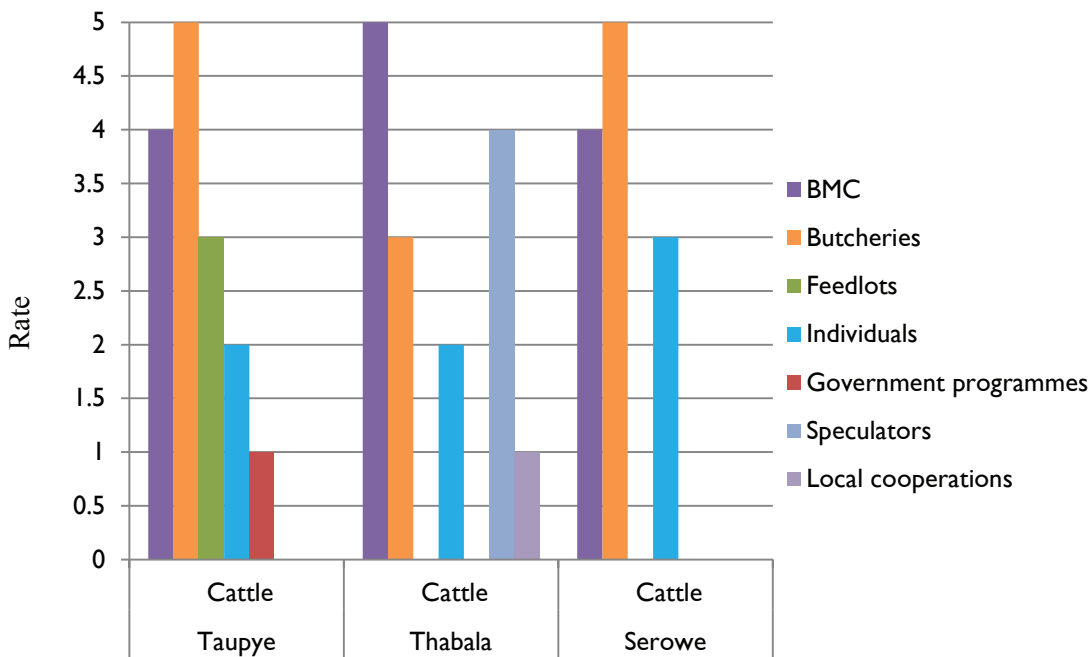
**Figure 3.** Focus group discussion in Taupye



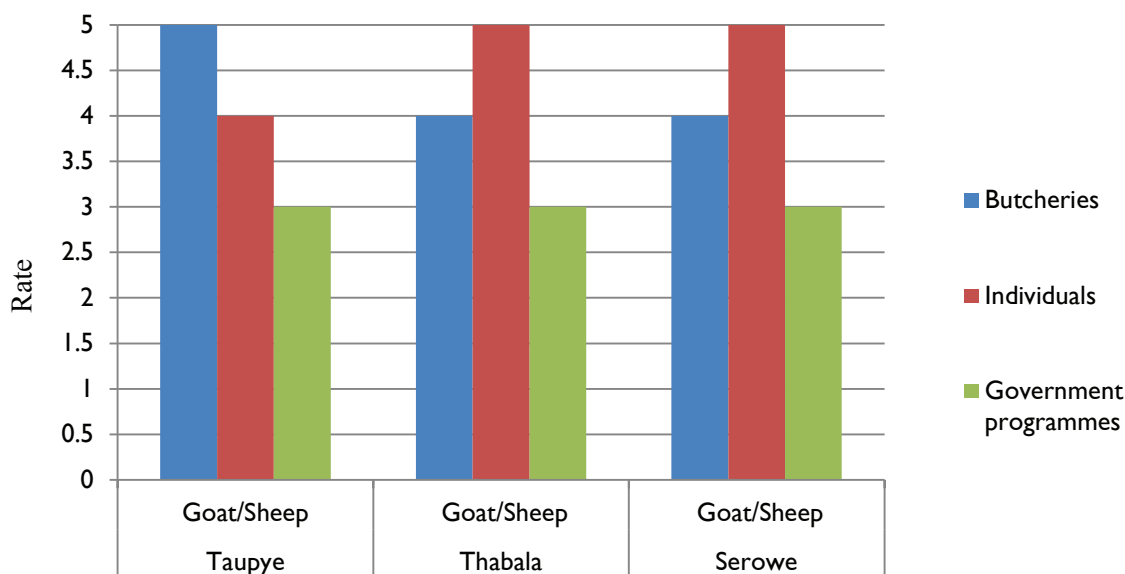
## Market channels used

Figures 4 and 5 illustrate the main market channels for selling livestock in the Central District, as reported in the group discussions. BMC and its abattoirs, and butcheries, were ranked as the top two market channels for selling cattle. The top channels for selling goats and sheep were individuals and butcheries. Figures 4 and 5 report discussion group ratings of 0 (not important) to 5 (most important).

**Figure 4.** Main market channels for selling cattle in Central District





**Figure 5.** Main market channels for selling goats/sheep in Central District

An early conclusion from both the group discussion exercise and the individual interviews was that market channels, production costs and pricing information were very similar across locations. Further, information about sheep was similar to, and so often applied jointly with, that about goats that the two small stock species could largely be reported together.

From the group discussions held in the above-mentioned areas, only Thabala farmers cited cooperatives as part of the marketing system or value chain. In Thabala, the 'Mothamo' cooperative buys cattle from local farmers.

## Quality requirements

Group discussion revealed that the attributes or characteristics that buyers look for when purchasing cattle and small stock vary across the individuals and organizations doing the buying. They include:

- Body condition
- Weight or estimated weight (BMC uses scales, butcheries and individuals rely on visual assessment)
- Breed
- Sex
- Age
- Freedom from visible signs of disease
- Conformation of animal and carcass

Substantial agreement emerged from the discussion group that in most cases, and for many reasons, farmers are unable to provide cattle that meet the specifications required by buyers. As an example, although most of the farmers in the discussion claimed to be aware of specified buyers' demands for purchased animals' age, some continued to deliver old cattle to the market and received an associated low price, or had their animals rejected outright. The FAO (2013) study reports that the typical communal farmer does not weigh animals, even though the BMC's weaner buying program, developed over the last five years, has attempted to increase awareness about the importance of weighing animals for the export market channels.

The discussion group offered the following reasons for this disconnect on animal quality:

- Lack of information about a potential buyer's specifications prior to meeting the buyer;
- Lack of background knowledge about production practices to target the required specification, or indeed for market demand more generally;
- Cultural issues, especially those resulting in reluctance to sell young animals;
- Inability to acquire sales permits, as mandated by the export traceability system;
- Lack of access to information about more modern, innovative farming practices.

Further discussion of access to information revealed that the Livestock Advisory Centre (LAC)<sup>1</sup> is the main source of livestock technology, inputs and input-related information for Botswana's livestock producers. In some remote areas, the LAC network extends to mobile outlets, although workshop participants reported that there are very few such mobile LACs in the Central District.

## Movement controls

Much discussion dwelt on cattle sales permits, which must be obtained from area veterinary officers to verify the origin and animal health background of cattle for sale. Permits are based on electronically reading each animal's bolus,<sup>2</sup> which serves as the main identifier under the export traceability aspects of the animal identification system. Absence of the veterinary officer, or technical problems with bolus-reading machines, were reported and required farmers to wait for long periods (several months' delays were reported) for the permits.

For sales outside the BMC-mediated export systems, witnessing of sales by a village chief is legally sufficient. This represents a lower-priced sales channel and one subject to speculative purchasing when farmers are keen to sell for climatic reasons, or when household cash flow requires it.

Further discussion suggested that BMC's maintenance of the database of purchased cattle is experiencing problems, and some overall scepticism of the system was expressed.

## Prevailing prices reported

Figure 6 presents the average sale prices reported by farmers' discussion groups for weaner and adult cattle, and for small stock, in study area market outlets during 2012. Farmers generally report that buyers (BMC, feedlot, butchers, individuals etc.) offer different ranges of prices that largely depend on the attributes listed above. BMC's volume of cattle purchase, and well-publicized price and purchase arrangements, support the discussion groups' identification of it as the price maker in the cattle market, although (see below) this applies directly only to the young animals that BMC seeks for export beef markets.

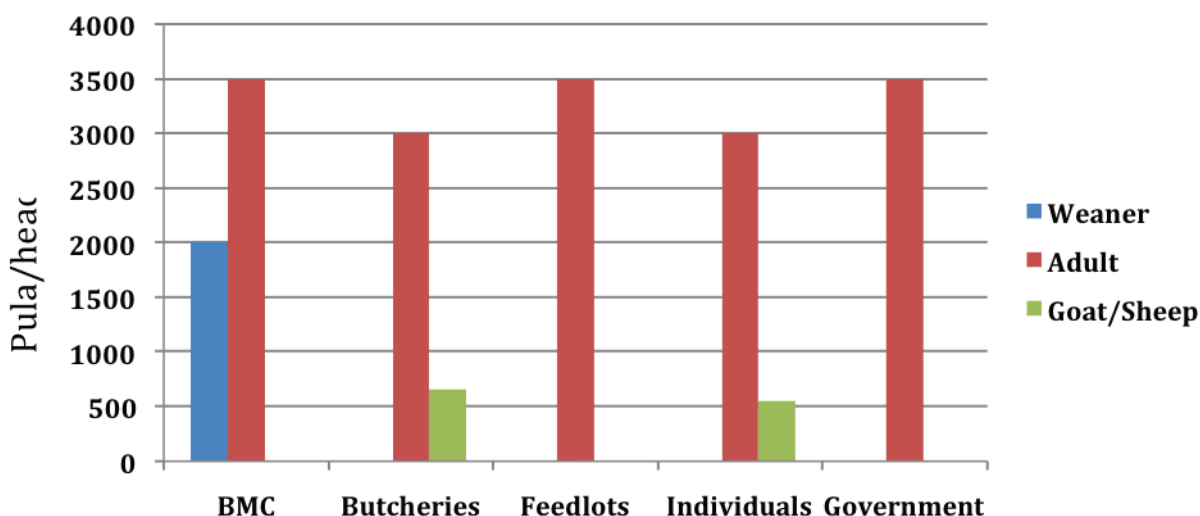
The discussion groups reported that BMC pays 8 Botswana pula (BWP) per kilogram (8.95260 BWP = 1.00 USD at 24 February 2014) for live weaner cattle (showing no adult teeth) and BWP 5/kg for live adult cattle. This equates to an average of BWP 2000/weaner and BWP 3000 to 4000/adult animal. Although BMC buys all ages of cattle, veterinary and extension officers told workshop participants that BMC's preference is for weaners and young animals. It was

1. LAC is a division under the Department of Veterinary Services (DVS) in the ministry of agriculture. DVS and the Department of Animal Production which provides extension services are the main source of information on livestock inputs. LAC serve as an outlet for the sales of subsidized livestock inputs to the farming community such as veterinary drugs, livestock feeds etc. According to FAO (2013), LAC has a network of about 36 outlets of the Livestock Advisory centers. LAC is a division under the Department of Veterinary Services (DVS) in the Ministry of Agriculture. DVS and the Department of Animal Production which provide extension services are the main source of information on livestock inputs. LAC serve as an outlet for the sales of subsidized livestock inputs to the farming community such as veterinary drugs, livestock feeds etc.

2. The bolus is an identification device which carries a RFID microchip and is inserted into the rumen of cattle. It is made of a very hard ceramic, the same as that used for humans' artificial joints and is of a similar size and shape to a carrot.

reported that BMC agents (including feedlot operators) regularly visit cattle posts and villages to buy young animals, but will purchase older animals only when delivered to official BMC collection points.

**Figure 6.** Average prices of adult and weaner cattle, and goats/sheep



Feedlot owners pay some BWP 3000 to 4000/head of cattle depending on animals' size.

It was particularly noted during the group discussion with Thabala farmers that, in most cases, feedlots buy cattle via independent traders. Some of such traders were reported to buy weaners for BMC. According to farmers, such traders generally pay low prices, on average BWP 1800/head for older cattle and BWP 6/kg for weaners.

Butcheries (the main livestock buyers in the study area) are reported to offer regularly an average of BWP 3000/head of adult cattle. This price is reported to be dependent on animals' size, although butchers are reported to use scales rarely. So this statement could not be expressed in terms of weight.

Individuals buy cattle for weddings, funerals, festivals, and restocking purposes (the latter primarily involving female stock). They pay between BWP 2000 and 4000/head, with a price discount for older cattle.

Farmers themselves reported buying cattle for breeding, restocking, fattening or reselling purposes. The prices vary based on sex, age, breed and health. On average, farmers pay BWP 2500 for heifers and BWP 3000 to 4000 for adult females depending on visual appearance. Farmers reported paying occasionally as much as BWP 15,000 to 45,000 for a breeding bull.

Farmers reported also buying goats and sheep for restocking and breeding purposes, usually paying on average BWP 500 to 1000/head depending on animal condition, age, and sex. For breeding purposes, reported prices ranged from BWP 800 to 900 for sheep.

Farmers report that butcheries and individuals pay between BWP 400 and 700 for goats, and BWP 500 to 800 for sheep, respectively.

Farmers further report that government programs purchase goats using a fixed price of BWP 500/animal.

## Major cost items in livestock production

The major costs incurred by smallholder livestock producers in the Central District of Botswana are reported to be:

- Feed and licks
- Fuel and transport

- Labour
- Cost of water pumping and borehole operation
- Drugs/medicines/vaccines

Most farmers reported buying their feeds and drugs from Livestock Advisory Centres (LAC).

Farm labour is reported to be plentiful in the area, and reported that wages range from BWP 1000 to 1500/month for a full-time employee.

Details of costs of production were studied further by survey (see below), rather than discussion.

## Water access

Water is in scarce supply, and reported by workshop participants to be a major constraint to livestock production. The source of water for most Central District farmers was reported as boreholes. Some farmers (e.g. those in Thabala) whose holdings are near cluster fencing (a fence erected around a group of arable fields within communal land) are not permitted to drill boreholes, as this area is reserved for crop production. Farmers operating a feedlot are required to have a borehole within at least 8 kilometres of their site. Farmers described these water use restrictions as a hindrance to their pursuit of livestock market opportunities.

## Market information

The workshop identified the following major sources of information (Table 1).

**Table 1.** *Main agricultural information sources reported for livestock prices and inputs*

| Livestock prices  | Livestock inputs   |
|---|--|
| <ul style="list-style-type: none"> <li>• BMC (via SMS)</li> <li>• BTV/radio</li> <li>• Individuals</li> <li>• Input suppliers</li> <li>• Agriculture shows/auction sales</li> </ul> | <ul style="list-style-type: none"> <li>• LAC</li> <li>• Extension officers (DVS)</li> <li>• Input Suppliers (AgriVet, AgriFeed) and cooperatives</li> <li>• TV/radio</li> <li>• Farmers magazines</li> <li>• Personal knowledge</li> </ul> |

Workshop participants from Taupye carry out their livestock farming activities about 10 km away from Mahalapye, whereas farmers in Thabala are located 19 km from Serowe (see map). For both groups, the major sources of information (Table 1) about livestock prices come from buyers such as the BMC, which circulates price information via flyers and SMS text messaging.

As other cattle buyers such as butcheries and feedlots use BMC prices as reference points, having this guide for assessing different grades of cattle gives farmers leverage in price negotiations with buyers. Other sources of price information include Radio Botswana and Botswana TV—which air specially produced agricultural programs—and non-independent source such as contact with input suppliers, co-operatives, agricultural shows and auction firms.

## Individual farmer interviews

Actors operating butcheries, supermarkets and input suppliers were identified with the guidance of extension officers, and consumers were randomly selected and interviewed in butcheries and supermarkets while buying meat. This data was collected using a questionnaire directed at farmers, butcheries, input suppliers and consumers.

**Figure 7.** Individual farmer interviews at Thabala



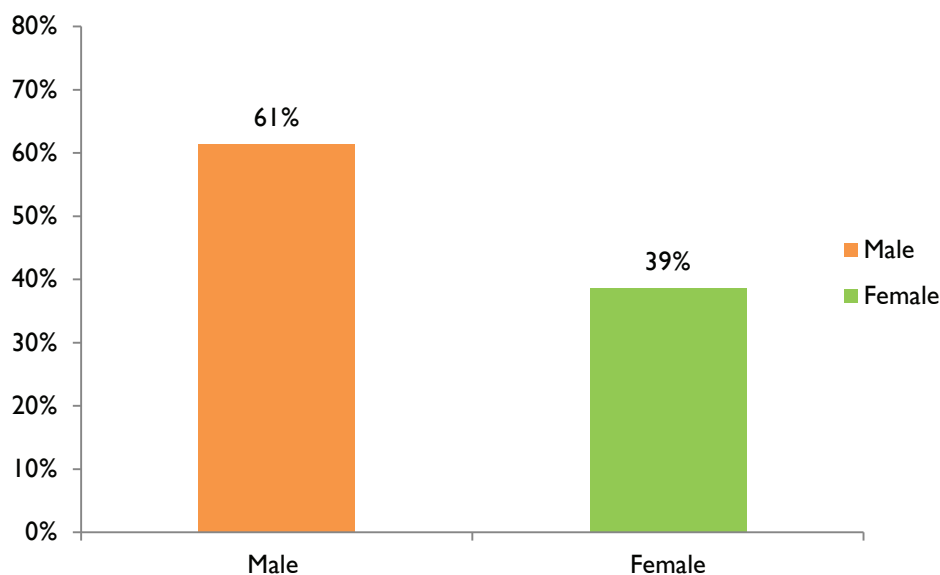
All farmers who participated in the focus group discussion were also interviewed on a one-to-one basis. Some 46 farmers were interviewed, all of whom were livestock owners. The data collected included:

- Basic demographic information such as age of the farmer, sex of the head of the family, level of education of the farmer, and land type and use;
- Farm-specific data, such as number and type of livestock owned, slaughtered, sold and other uses;
- Management practices (grazing pattern, supplements and general husbandry), and associated costs;
- Marketing channels and decisions, and price information;
- Constraints and opportunities encountered or recognized.

## Farm household characteristics

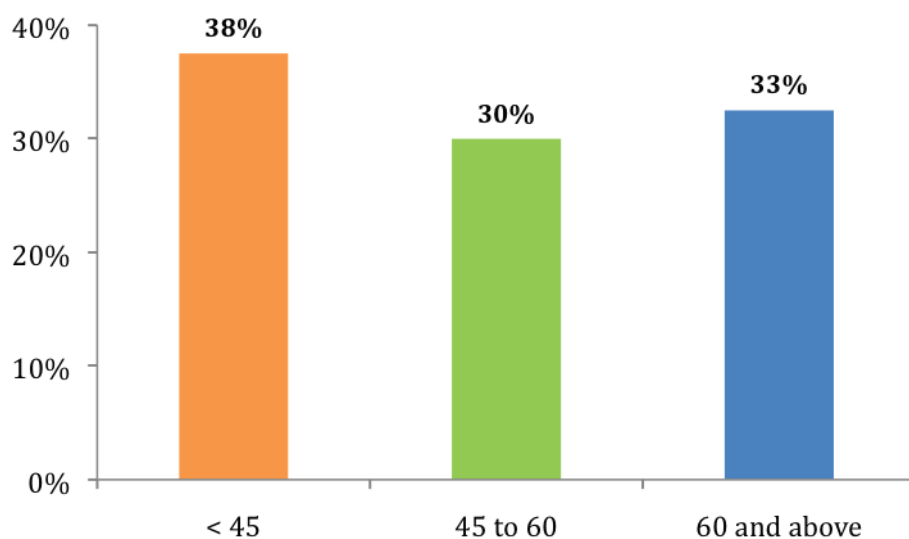
Of all farmers interviewed, most heads of households were male; 61% men and 39% women (Figure 8).

**Figure 8.** Gender composition of households surveyed

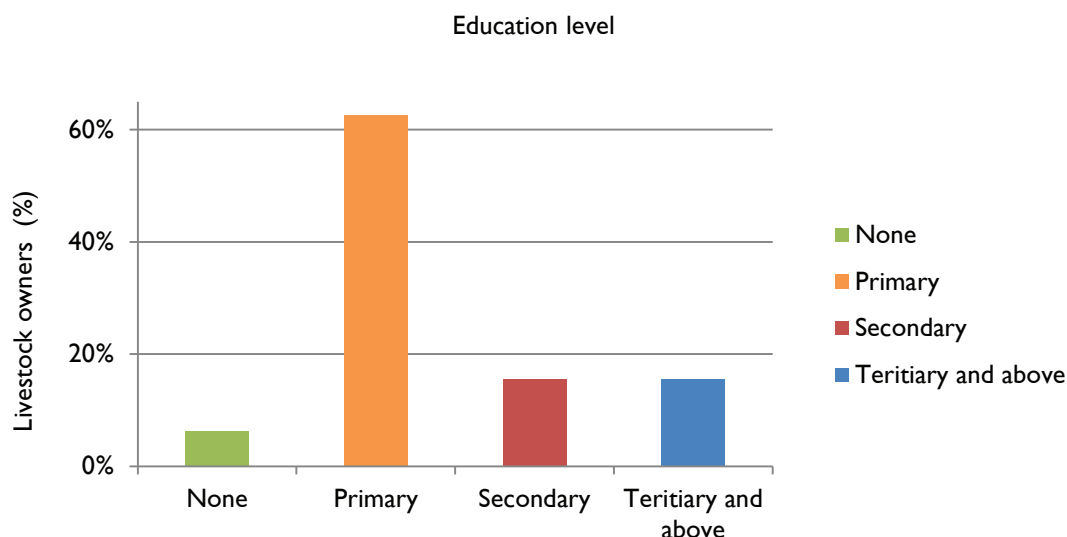


The ages of smallholder producers interviewed ranged from 35 to 77, with a mean age of 49 years. Of three age categories established for survey purposes, the majority of farmers interviewed (Figure 9) were under age 45 (38%) and over age 60 (33%). Some 30% of interviewed farmers were between the ages of 45 and 60.

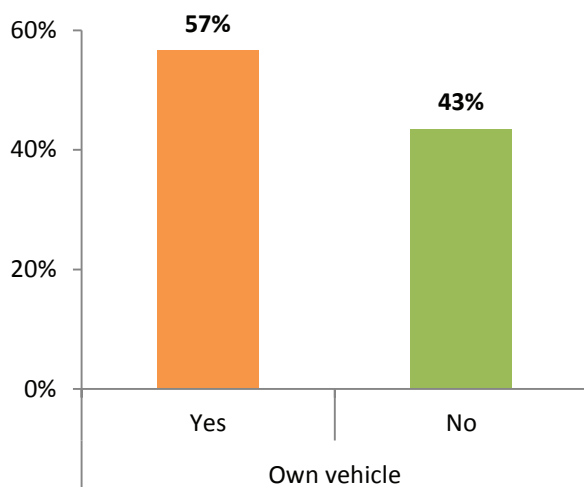
**Figure 9.** Age composition among surveyed households



Nearly two-thirds of the respondents (65%) had achieved only primary school level of education (Figure 10). Among the 94% of farmers who had acquired some education, 16% had high school qualification certificates, while 16% had higher (tertiary) educational diplomas and certificates. Only 6% of the interviewed farmers had no formal education.

**Figure 10.** Education level (%)

As shown in Figure 11, 57% of interviewed farmers reported owning their own vehicles. In addition to giving these households a high status in the community, vehicles also facilitate better connections outside the community, particularly for marketing (of livestock and other products), input purchase, access to off-farm employment, and access to commercial information.

**Figure 11.** Transport ownership in the study area

Most of the interviewed farmers use their vehicles as transport in selling and purchasing livestock, and in buying inputs. Few of the respondents used hired vehicles for their livestock production activities: just 13% used them for buying livestock, 4.3% to purchase feed, and 8.3% to sell animals (Table 2). It is notable that almost all of the farmers in the study area report trekking their animals to water points.

**Table 2.** Transport facilities used for livestock operations

| Activities              | Trekking animals | Own vehicle | Hired truck | Other |
|-------------------------|------------------|-------------|-------------|-------|
| Purchased livestock     | 17.4%            | 69.6%       | 13.0%       | 0.0%  |
| Purchased feed          | 8.7%             | 87.0%       | 4.3%        | 0.0%  |
| Water for animals       | 94.4%            | 5.6%        | 0.0%        | 0.0%  |
| Animals going to market | 20.8%            | 62.5%       | 8.3%        | 8.3%  |

Table 3 indicates that a typical sample household has about 7 full-time labourers, 4 of whom work in livestock-related farming activities and 3 in non-livestock activities. Overall, females contribute 17% of all full-time labour to farm activities and 20% of full-time labour to non-farm activities.

**Table 3.** Availability of labour and farm management and decision-making

| Activity      | Full time labour | % of which, female | Part time labour | % of which, female | Average monthly wage rate (BWP) |
|---------------|------------------|--------------------|------------------|--------------------|---------------------------------|
| Livestock     | 4                | 17                 | 4                | 4                  | 489                             |
| Non livestock | 3                | 20                 | 1                | 0                  |                                 |

A typical household employed about 5 people as part-time labourers for both livestock and non-livestock activities, of which 4% are female. The average monthly wage was reported as BWP 489, but this does not take account of the common practice of farm employees' receiving part of their salary in kind (food, housing, animals).

Examination of reported intra-household responsibilities is presented in Figure 12. Livestock operations (summarized as 'feeding') and the generalized 'decision-making' are carried out either jointly by the household members or a man in the household. Employees are responsible for feeding and other livestock activities, but not management decision-making.

**Figure 12.** Labour allocation in feeding animals and farm decision making for livestock activities

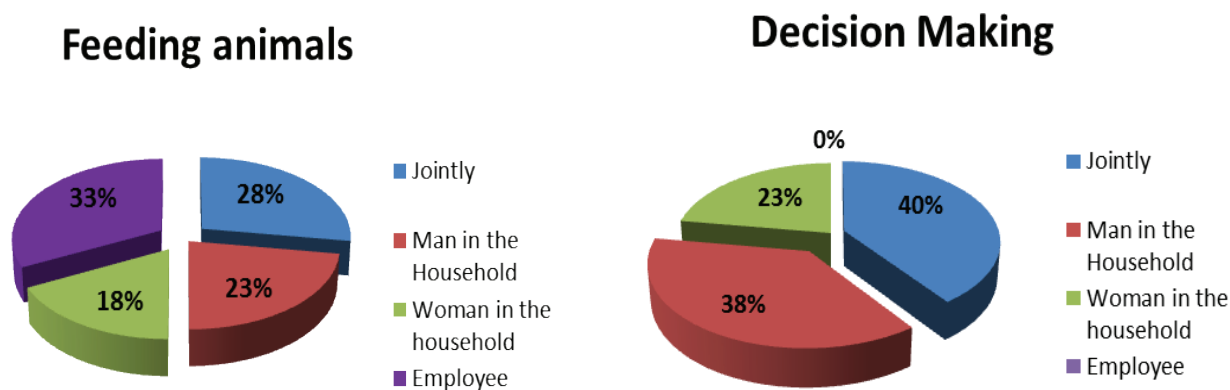
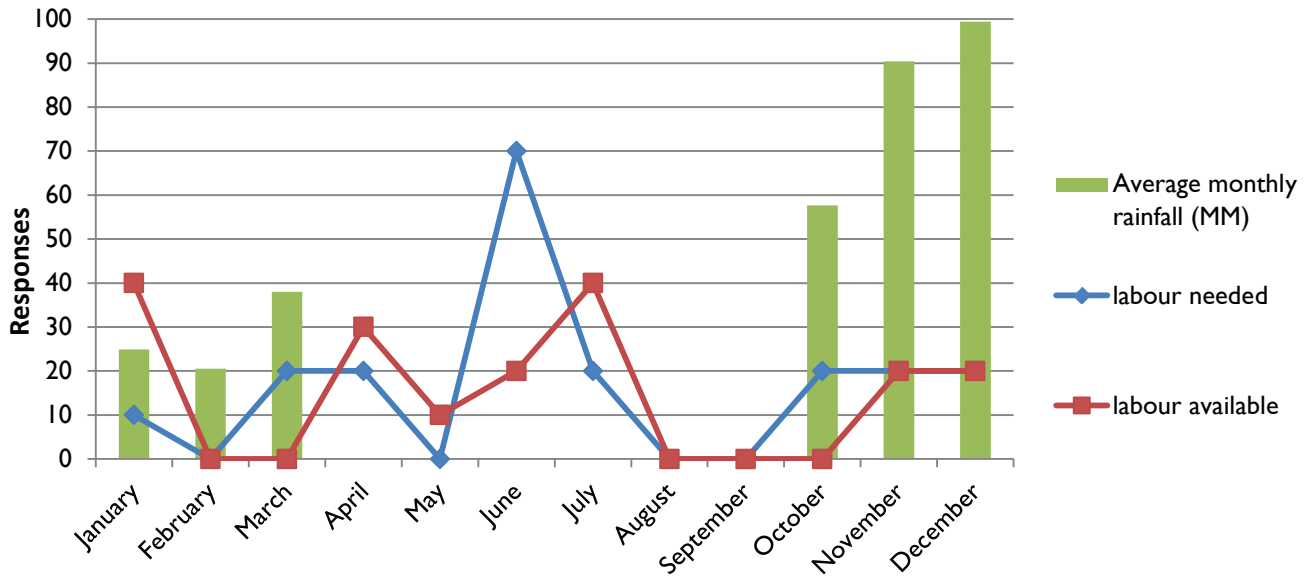


Figure 13 shows the monthly distribution of labour supply and demand, and average rainfall. Overall, survey respondents claim that labour is abundant; however, seasonal surplus and shortages do occur. They cited March, April, June and October as the months when they experience a labour shortage. This may be related to marketing activity immediately after the rainy seasons (December through March) when most of the farmers sell their livestock. Farmers report a higher labour demand during the dry season than at other times, although the tasks involved were not specified.

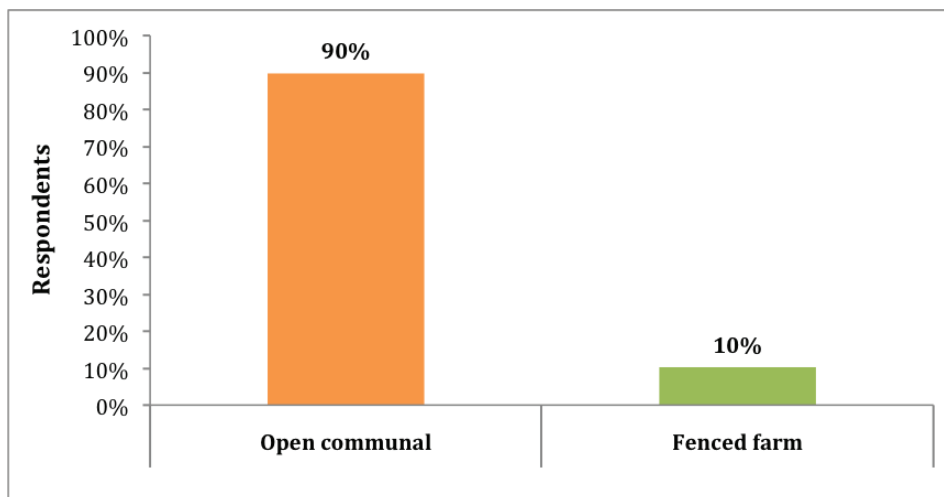


**Figure 13.** Annual labour demand and supply and average monthly rainfall\* in the study area

\* Average rainfall for the study area is calculated based on the daily rainfall data provided by Botswana's Department of Meteorological Service.

## Grazing access

Figure 14 shows that 90% of the livestock farmers interviewed use open communal grazing lands, and just 10% have access to fenced grazing land.

**Figure 14.** Land title and type of grazing land

## Herd composition

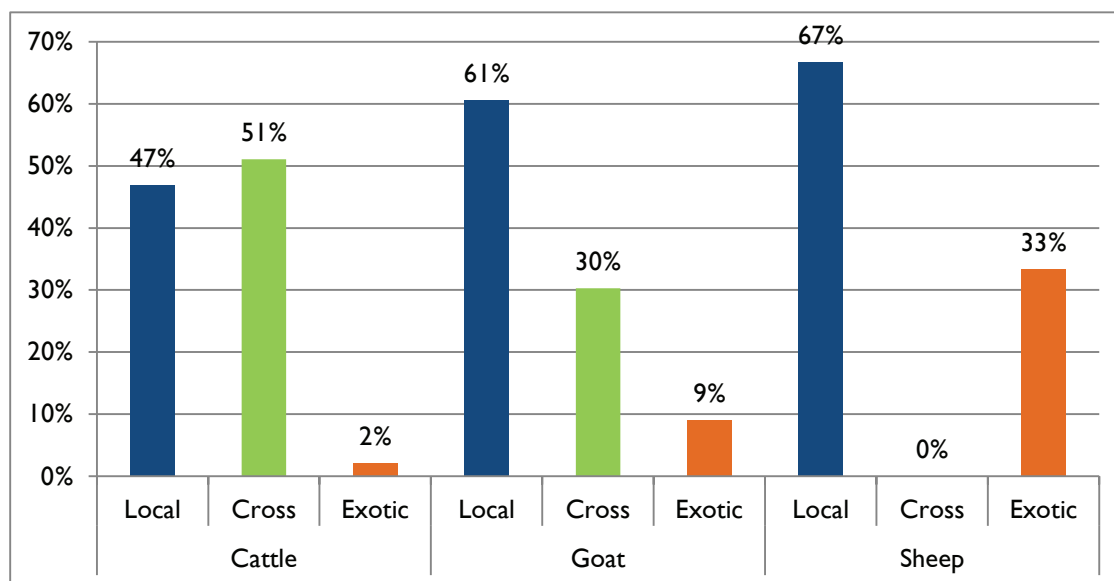
The composition of livestock herds owned by surveyed farmers varied. The most commonly-held animals were cattle and goats, owned by 50% of farmers surveyed. Next, 31% of the farmers owned only cattle (Table 4). Across the surveyed farmers, cattle constitute the majority of the animal population in the study area (76%), followed by goats (22%).

**Table 4.** Proportions of livestock types and combinations owned by farmers in Central District, Botswana

| Livestock type  | Livestock numbers | Percentage of total livestock | Combinations of livestock | Percentage of total farmers |
|-----------------|-------------------|-------------------------------|---------------------------|-----------------------------|
| Cattle          | 2227              | 76%                           | Cattle                    | 31%                         |
| Goat            | 637               | 22%                           | Goat                      | 14%                         |
| Sheep           | 68                | 2%                            | Sheep                     | 0%                          |
|                 |                   |                               | Cattle and goats          | 50%                         |
|                 |                   |                               | Cattle, goats and sheep   | 5%                          |
|                 |                   |                               | Cattle and sheep          | 0%                          |
| Total Livestock | 2932              | 100%                          |                           | 100%                        |

## Breed types

Information on livestock breed types reported by surveyed farmers in the study area is presented in Figure 15. Most of the cattle and goat farmers interviewed raise local breeds and crossbreds, and report their local adaptations as the main reason for breed choice. Some 2% of cattle farmers report rearing purebred exotic breeds. Small stock owners keep indigenous goats and/or sheep, with an expressed preference for indigenous breeds over exotics, for the same reasons.

**Figure 15.** Breed types held by producers

## Herd size and dynamics

Overall, producers surveyed report both buying and selling of livestock, although the prevalence of uses for household and commercial purposes varies by species (Table 5).

**Table 5.** Aggregate reported numbers of livestock exchanged

| Species | Number slaughtered only for home consumption | Number exchanged | Number gifted out | Number of livestock sold | Number of livestock Purchased | Percentage of total farmers who sold their livestock | Percentage of total farmers who purchase livestock |
|---------|--|------------------|-------------------|--------------------------|-------------------------------|--|--|
| Cattle  | 4  | 8                | 6                 | 353                      | 8                             | 0.46   | 0.06   |
| Goats   | 4  | 6                | 14                | 85                       | 52                            | 0.13   | 0.13   |
| Sheep   | 2  | 0                | 0                 | 3                        | 0                             | 0.04   | 0  |
| Total   | 10   | 14               | 20                | 441                      | 60                            | 0.54   | 0.17   |

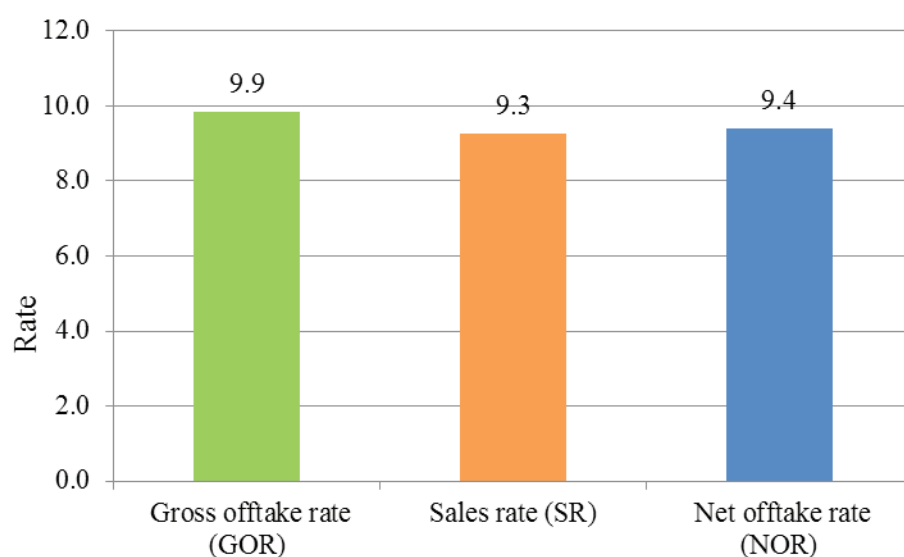
Cattle emerge as the most commonly-sold species, with 46% of surveyed farmers selling them, as compared to just 13% selling goats. Purchases demonstrate a different pattern, with twice as many farmers reporting buying goats (13%) as for cattle (7%).

The average livestock birth rate for the surveyed farmers is about 35% for cattle, 34% for goats and 69% for sheep. These observed rates are lower than the time series birth rates calculated by BIDPA (2006), where cattle and goat birth rates in traditional farming for most of the years investigated are above 50%.

Similarly, the mortality rate for cattle derived in this study is 5%, which is lower than the rate estimated recently by FAO (2013) which projected 9% mortality for oxen and weaners and predicted a 6% mortality rate for a future expanded weaner system. The mortality rates for goats and sheep are 11 and 16%, respectively in the current study. These rates that are higher than for cattle is consistent with the BIDPA (2006) study.

## Livestock marketing

In addition to Table 5's information on sales and purchases, Figure 16 shows the average gross off-take,<sup>3</sup> sales rate and net off-take rate among cattle sellers. The average gross off-take, sales and net off-take rates are 9.9, 9.3 and 9.4, respectively. The small difference between gross and net off-take rates is due to the low number of cattle purchased. These values are similar to the time series off-take rate presented in FAO (2013) and to those estimated by GoB (2010).

**Figure 16.** Off takes and sales rate of cattle

3. The methodology used to calculate gross off take, sales rate and net off take rate adopted from Asfaw and Jabbar (2008).

The market channels used by the surveyed farmers, and prices they received, are presented in Table 6. Consistent with the group discussions, the majority of farmers sold their cattle to butcheries, the BMC and individuals, and the most commonly-used marketing channel for goats and sheep is sales to individuals.

**Table 6.** *Livestock marketing system and prices*

|                     | Quantity sold | Percentage sold (%) | Average selling price | Quantity purchased | Percentage purchased (%) | Average purchase price | Time takes to get paid |
|---------------------|---------------|---------------------|-----------------------|--------------------|--------------------------|------------------------|------------------------|
| Cattle              |               |                     |                       |                    |                          |                        |                        |
| Individuals         | 75            | 21%                 | 3639                  | 8                  | 100%                     | 3500                   | Immediately            |
| Butchery            | 122           | 35%                 | 3560                  | 0                  | 0%                       | 0                      | Immediately to 1 day   |
| BMC                 | 96            | 27%                 | 3238                  | 0                  | 0%                       | 0                      | Up to 2 weeks          |
| Feedlot             | 30            | 8%                  | 3000                  | 0                  | 0%                       | 0                      | 1 to 2 weeks           |
| Traders/speculators | 30            | 8%                  | 2325                  | 0                  | 0%                       | 0                      | Immediately to 1 day   |
| Total               | 353           | 100%                | 3152                  | 8                  | 100%                     | 3500                   |                        |
| Goat                |               |                     |                       |                    |                          |                        |                        |
| Individuals         | 85            | 100%                | 692                   | 52                 | 1                        | 744                    |                        |
| Total               | 85            | 100%                | 692                   | 52                 | 1                        | 744                    |                        |
| Sheep               |               |                     |                       |                    |                          |                        |                        |
| Individual          | 3             | 100%                | 730                   |                    |                          |                        |                        |
| Total               | 3             | 100%                | 730                   |                    |                          |                        |                        |

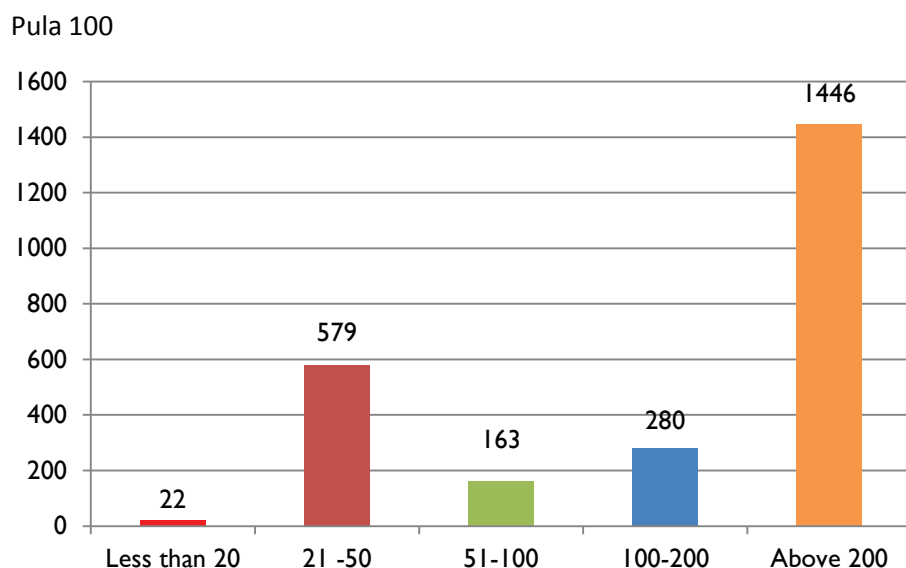
For both cattle and small stock, surveyed farmers report receiving the highest prices when they sell to individuals. However, the number of animals that individuals can buy is limited. Butcheries and BMC are the major marketing channels for large sales lots of cattle.

Table 6 also highlights the reported differences between channels in the time between delivery and payment, with BMC being noticeably slower to pay—although two weeks may not be interpreted as a long period by some observers.

## Revenue calculations

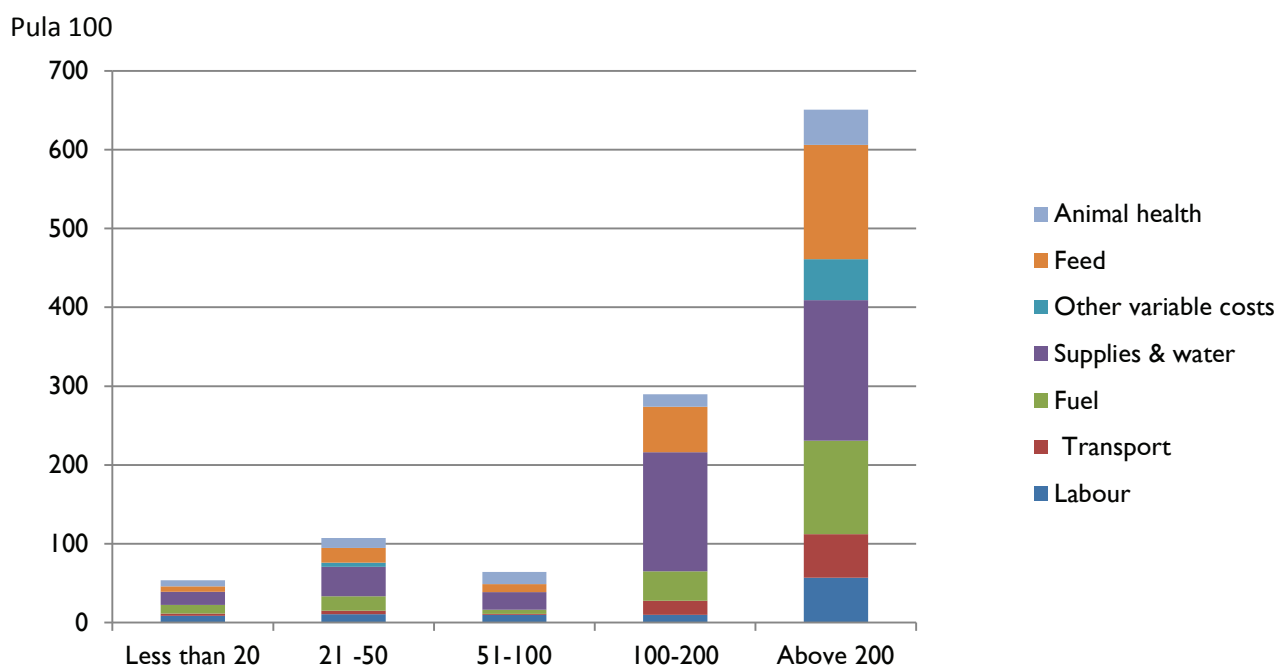
Figure 17 presents a summary of survey information about livestock sales revenue, with the sample disaggregated by herd size. For the purposes of gross margin calculation, herd size is expressed in TLU.<sup>4</sup> Livestock sales revenue generally increases with herd size, but this is not consistent across all size classes. This result is generally to be expected as farmers with larger herd sizes would sell more livestock (see also Asfaw and Jabbar (2008) for Ethiopia). However, it is clear that in some categories sales revenues are lower for larger herd sizes than for their smaller counterparts.

4. Following Pica-Ciamarra and Chilonda (2005) and Bahta (2009), tropical livestock units (TLU) are used. The livestock conversion factors are (TLU) 0.70 for cattle, 0.10 for goats and sheep.

**Figure 17.** Livestock sales revenue by herd size (TLU)

## Expenditures on identified cost items

Surveyed farmers report incurring costs for fuel, feed and supplies, water pumping, and labour. Costs for vaccines and drugs are relatively low, as most of the surveyed farmers benefit from subsidized inputs sold by LACs and/or free vaccination programs. Figure 18 plots total variable costs by herd size categories. As with sales revenue, total variable costs are positively associated with farm size, although the relationship is not clear-cut. For example, farms with less than 20 cattle spent on average of less than BWP 7000/annum on variable inputs, whereas those with more than 200 cattle spent over BWP 75,000.

**Figure 18.** Total variable expenses by herd size (TLU)

It is apparent from the survey results that the communal sector uses few inputs beyond water, available grazing and labour. Therefore, it is not surprising that labour and fuel (used for pumping water) are reported as the most commonly sought inputs. Reported high expenditure on feed indicates that some farmers engaged in strategic feeding during drought periods.

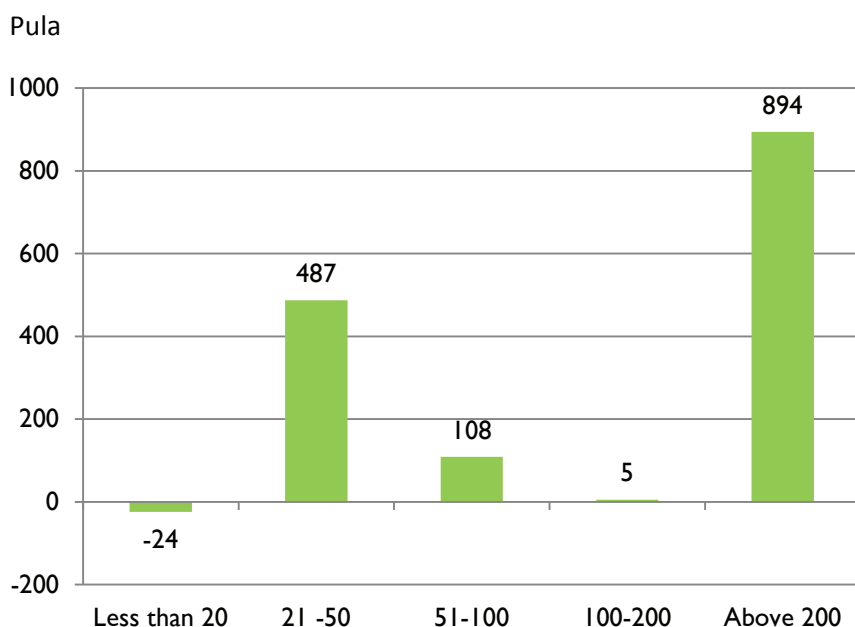
Although fixed costs such as capital and administrative costs were not able to be recorded in the survey, variable costs' pattern across different herd sizes suggests some diseconomies of scale among smallholder livestock producers in the study area. This could be partially due to the difficulty of managing and coordinating a large livestock business enterprise, or inefficient use of available production technologies.

## Gross margins

As shown in Table 5, not all farmers sell cattle every year, implying that gross margin<sup>5</sup> computation for a single year may be negative if the farmer used purchased inputs and sold no animals. Thus, gross margin calculations as presented here are averages, and illustrate cash generation rather than underlying profitability.

Figure 19 plots gross margin against livestock herd size. Gross margin generally varies positively with livestock herd size, but there is much variation around the trend. Exceptions are herd size 51–100 and 100–200 TLU. Notably, gross margins are negative for surveyed farmers owning less than 20 TLU.

**Figure 19.** Gross margin by livestock herd size (TLU)



## Key constraints to improved livestock farmers' productivity

Constraints nominated by surveyed farmers include:

- Limited number of veterinary officers
- Double insertion of bolus in cattle
- The BMC's monopoly on export beef
- Lack of awareness and information about BMC quality requirements prior to point of sale

<sup>5</sup> Enterprise gross margin is computed as total revenue accruing to the enterprise, less total variable expense incurred by the enterprise.

- 
- Exploitation by agents/speculators
  - High costs of livestock feed and input such as medicine and seeds
  - Lack of good breeds
  - Livestock disease
  - Water shortage
  - Shortage of grazing land
  - Livestock theft
  - Fencing of cultivated land, constraining animal access to water
  - Prohibition of mixed or integrated farming
  - Poor access to drugs/medicines
  - Livestock transport problems

# Individual butchery and supermarket operators' interviews

## Scale of operation

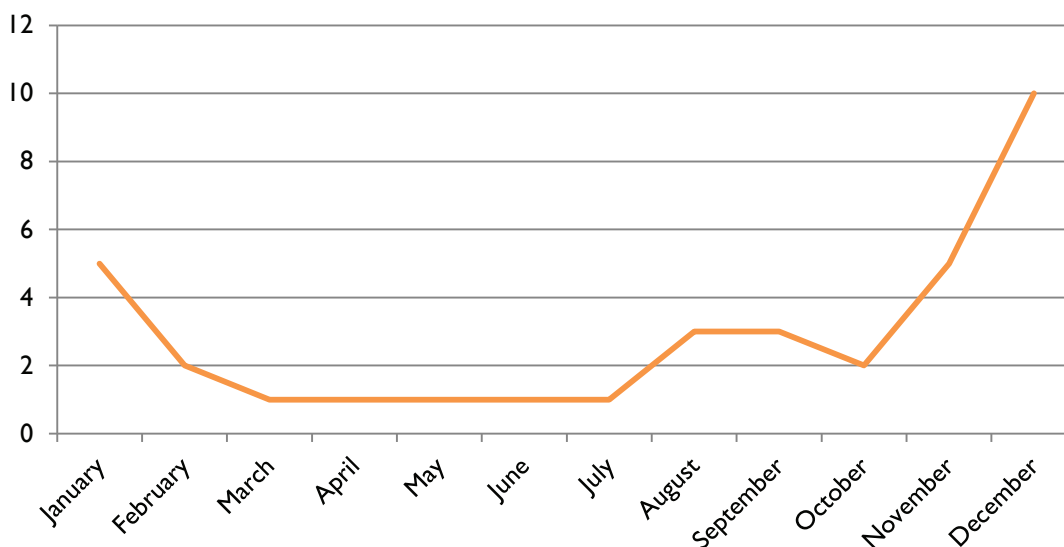
Actors from a total of 8 butcheries and 2 supermarkets in the study area were interviewed. Only two proprietors of said butcheries own their business' premises, with the remainder operating from rented premises. Average rent paid was reported as BWP 9600/month, depending on the size of the premises.

## Retail prices and meat demand

The most popular cuts of meat were reported by retailers to be whole carcasses or part carcasses, deboned beef and cuts, and deboned goats/sheep meat and cuts. The average reported retail prices were BWP 25/kg for whole carcasses or partial carcasses, BWP 32/kg for deboned beef and cuts and BWP 35/kg for deboned goats/sheep meat and cuts.

Figure 20 illustrates the survey respondents' reported pattern of meat demand in the study area throughout the year. This pattern is constructed from respondents' using a score ranging from 1 (low sales) to 3 (high sales) for each month. The retailers' responses suggest that the demand for meat is relatively high in the period from October to late January. This includes the intuitively recognized festive season (December–January) as the period when the demand for meat is highest.

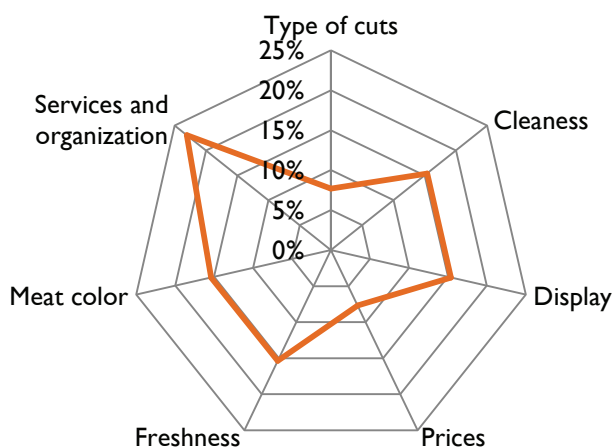
**Figure 20.** Distribution of meat demand throughout the year





Retailer respondents were asked about the attributes that consumers prefer when buying meat. Figure 21 reports that the quality of service and organization of the retail outlet is very important, particularly in butcheries. In the study area, butcheries, unlike supermarkets, are viewed as small shops that vary in the level of service provided. On the other hand, consumers are familiar with the kind of services and organization they expect from supermarket chains, which are somewhat standard across outlets.<sup>6</sup>

**Figure 21.** Factors consumers look when they buy meat (sellers perspective)\*



\*The factors or attributes that consumers look for when they buy meat is from the perspective of the retail outlets. The consumer's perspective on the attributes they look for when they buy meat is shown in Figure 22.

Qualities that consumers typically seek when buying their meat from retail outlets include meat colour, freshness, quality of the display of meat products, and cleanliness of the premises, as well as price (Jabbar et al. 2010). According to retailers surveyed in the current study, consumers pay rather little attention to prices and type of cuts provided by retailers, but are motivated by services levels and quasi-observable attributes such as colour and freshness.

Some of the constraints mentioned by butcheries in the study area include:

- Inadequate supply of meat
- Limited capacities of the slaughter facilities
- Lack of access to slaughter slabs
- Late delivery from suppliers
- High competition among meat retail outlets, particularly small butcheries

6 . In particular, Choppies, Pick n' Pay and Checkers.

## Individual consumers' interviews

To pursue further the question of consumers' demand for quality attributes, survey respondents were identified and engaged according to willingness to be interviewed while buying meat in butcheries and supermarkets in the study area.

### Consumers' characteristics

The socio-demographic characteristics, transport mode and choice of retail outlet of sampled consumers are summarized in Table 7. The majority of the 15 respondents (63%) were females. The majority of the respondents reported buying beef (62%), goat (63%) and sheep meat (75%) from butcheries; this reflects the large number of butcheries in the (largely rural) study area. Supermarkets are the second most common choice of retail outlet, particularly for beef (38%). However, for goat meat, street shops or farms are the second most popular retail outlets. Some 25% of respondents reported buying their sheep meat from supermarkets. These results should be interpreted with care because survey respondents were not identified as rural or urban residents.

**Table 7.** Consumers' socio-demographic characteristics and segmentation by other variables

| Characteristics         | Levels            |                    |     |
|-------------------------|-------------------|--------------------|-----|
| Gender                  | Female            | 38%                |     |
|                         | Male              | 62%                |     |
| Age                     |                   | 34                 |     |
| Retail outlet           | Beef              | Supermarkets       | 38% |
|                         |                   | Butcheries         | 62% |
|                         |                   | Goats              |     |
|                         | Goats             | Supermarkets       | 60% |
|                         |                   | Butcheries         | 63% |
|                         |                   | Street shops/farms | 31% |
|                         | Sheep             | Supermarkets       | 25% |
|                         |                   | Butcheries         | 75% |
|                         | Transport to shop | Own vehicle        | 44% |
| Minibus                 |                   | 38%                |     |
| Walking                 |                   | 13%                |     |
| Bicycle                 |                   | 6%                 |     |
| Total number of samples |                   | 15                 |     |

Regarding preference among the three meat types—beef, goat meat and sheep meat—53% of the respondents state preferring to buy beef. They stated flavour (63%), perceived healthiness (13%), its low price (13%) and availability (6%) as key justifications.

Some 44% of the consumers interviewed use their own vehicle when buying meat from retail outlets. Using a public minibus for shopping (38%) is also very common. Of all survey respondents, 13% said they walked to retail outlets to buy meat, and 6% used a bicycle. Half (50%) of the respondents claimed to spend less than BWP 50 for transport when they go to retail outlets to buy meat. About 13 and 31% of the respondents spend BWP 50 to 100 and more than BWP 100 respectively for such transport.

Figure 22 presents the product characteristics that surveyed consumers reported as being important. These vary with product. The data suggests that consumers demand certain high standards (such as freshness, cleanliness of premises and of meat sellers) when they buy beef, but are less strict about matters such as price and marbling of meat. Goat and sheep meat consumers seem to pay less attention to the quality attributes specified above.

**Figure 22.** Products' attributes important for consumers

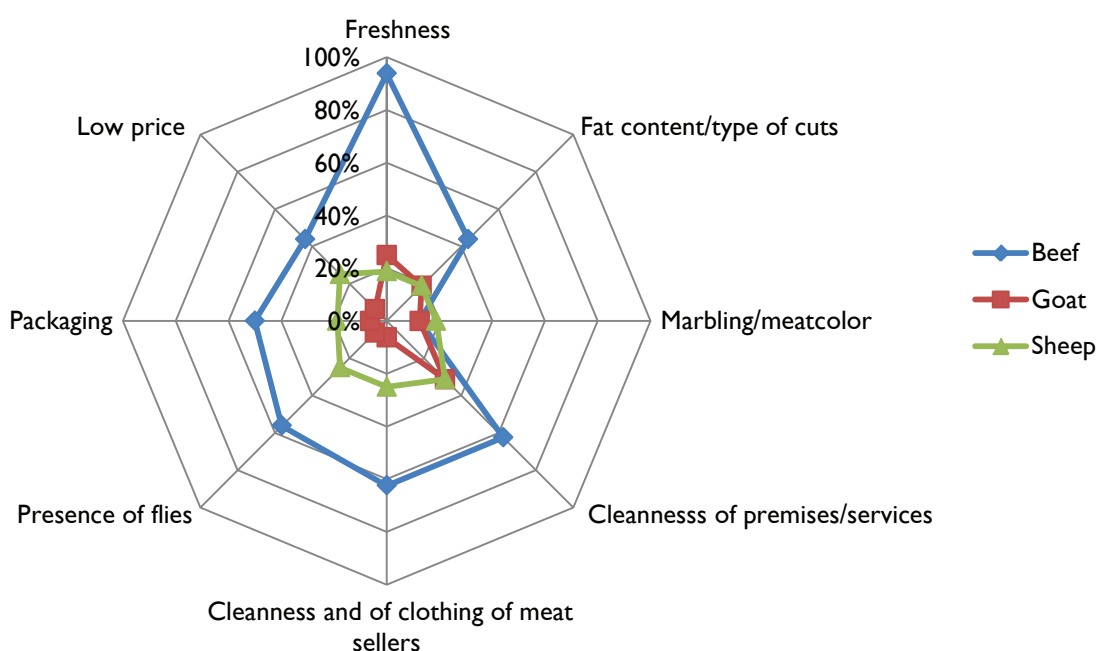
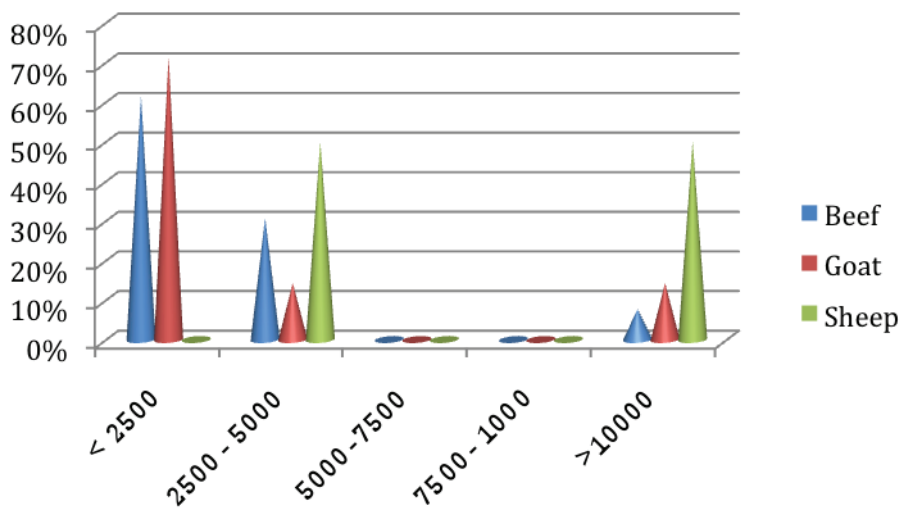


Figure 23 shows that most beef and goat consumers in the study (more than 50%) reported income of less than BWP 2500/month. This might be the reason that all consumers in general, and goat consumers in particular, pay less attention to the quality attributes of the meat they buy. Moreover, rural shops and butcheries where consumers buy their goat meat have much lower standards and regulation, providing little choice in terms of the quality attributes required by respondents.

**Figure 23.** Income category of consumers

## Individual input providers' interviews

Survey responses indicate that the bulk of existing customers for private input suppliers are commercial farmers, and that their client smallholder farmers are very motivated to buy inputs that are unavailable in LACs, and during public holidays. Additionally, private suppliers can make up the balance of orders which exceed the limits on purchases from LACs.

Surveyed input providers' reported supplies to farmers include drugs, licks and animal feed. As reported above from discussion groups and the survey of farmers, most farmers buy their drugs or feed from LACs, and receive extension advice from LACs as well. Private input suppliers interviewed reported that there is widespread misuse of drugs/medicines. They also stated that smallholder farmers and some commercial farmers only access their services when they cannot find the inputs they need at LACs.

Private input suppliers such as Agrivet and Agrifeed report difficulties in competing with the subsidized prices of LACs. As a result, some report business realignment toward pet feeds and drugs.

Some private input suppliers report having had contracts in the past with farmers to supply feeds and animal remedies, but that these contracts were abandoned due to farmers' unreliable payment.

# Discussion and conclusions

## Overview

This report presents results of a 'snapshot' survey of actors in Botswana's smallholder livestock value chains. This survey is one of the first of its kind, and sheds light on several topics that are often subject to a number of poorly-grounded assumptions. Data collection for a pilot area (the Central District) was achieved using a blend of discussion groups/workshops and individual surveys. In addition to generating new information about producers, the exercise provided, for the first time in Botswana, information on actors in the domestic value chains.

Although sheep and cattle value chains are very similar, and dominated by home slaughter and informal transactions with no single price-making mechanism, beef cattle transactions are dominated by BMC pricing. Several cattle buying actors represent BMC, particularly to supply feedlots. Government purchases of sheep and goats for the purposes of programmatic distribution to newly-established farmers are a significant price driver during certain periods.

Discussion emphasized producers' inability to supply buyers with the qualities of animal demanded, for both cattle and small stock. At the other end of the value chain, significant differences emerge regarding retailers' perception of consumer demand for product attributes and the statements of consumers on the same subject. Details of missing information and poor information-delivery systems emerged.

Producers' choice of cattle marketing channel is heavily influenced by the implementation arrangements for animal traceability. Designed to enable smallholder access to high value markets, system dysfunction actually prevents this from occurring and results in many cattle being sold to lower value markets. This is primarily associated with slow response from local officials in recording animal identities to approve sales. However, the extent to which such problems affect the sale of export quality cattle is not clear, as most cattle sales are of aged animals at low weights and few producers reported enthusiasm for sales of weaners. No such formalities apply to small stock marketing.

Comparison of prices available in different marketing channels reveals that BMC pays the best prices for appropriate cattle, although these are not substantially higher than butchers' prices. Government programs offer the highest prices for small stock. Traders' prices are reported to be low and viewed unfavourably, but it is also noted that many traders purchase cattle on behalf of BMC or feedlots. Duration of payment delays were reported and vary across the marketing channels, with BMC being the slowest payer.

Cost items were identified by the study, and for the first time estimates are provided of the costs faced by smallholder producers. An important result is that the nature and level of production costs vary with the size of operation. FAO's 2012 study projected cost differences based on the intensity of production system, and the results of the current study offer quantitative evidence for this, while also identifying an interaction amongst cost, intensity and size of operation.

Categorization of producers' operations was advanced by this study, identifying both in discussion and by survey results the distribution of land management approaches and the linkages to water supply and current policies restricting land and water use.

Most of the producers interviewed were male. There is evidence of joint male and female participation in both work and decision-making about livestock operations, although this subject needs further examination. Age distribution was wider than expected, but indicates that a third of producers are over 60. Two thirds of producers have education at primary or lower levels, and over half have their own vehicles.

The extent to which labour is a constraint on livestock management and husbandry is not clear. Seasonal shortages were reported, linked to both seasonal sales associated with household cash needs, and entrenched seasonal breeding patterns for both cattle and small stock.

A sketch of the makeup of cattle herds and small stock flocks is provided in terms of breeds and sex and age ratios. These portray a mix of breeds and a large number of aged and male animals on hand. Although off-take of cattle is higher than for small stock, small stock purchases are more common than those for cattle. Hence commercialization of livestock systems requires further examination, and the role of government in small stock distribution systems should be further studied. Mortality reported in this study is significantly lower than reported by other commentators and from sector-level estimates: this also requires further study.

Producers view BMC's export monopoly, and associated dominance of domestic cattle pricing, as a negative influence on their commercial performance and management system. High costs, particularly of feed, are also viewed as a constraint. These two elements clearly influence competitiveness. Further identified constraints, directly and indirectly affecting competitiveness, are management of grazing lands and information about retail market demand.

Retailers portray a marked seasonal pattern of meat demand. This has not before been identified formally and is of obvious interest at all levels of the value chain where competitiveness is being pursued. Retailers of beef and small stock consistently identify the availability and cost of animals as constraints. Viewed together with producers' minimal sales and claims of low sales prices, a major transaction cost-related problem is apparent. Further evidence for this is provided by reports of inadequate animal transport, delays in issue of animal identification-related permits, and slow payments.

Supermarkets provide a significant share of consumers' purchases, even in remote areas, although this is far more apparent for beef than for small stock meat. Overall, butcheries remain dominant, but further research is necessary to identify emerging trends.

The study offers some evidence of crowding out of private sector provision of inputs by the LAC mechanism of subsidized inputs.

## Conclusions

Producers' demand for more support and information about value addition and innovation clearly outweighs supply within the livestock value chains. Both discussion and survey responses indicate particular problems in transactions with buyers, including BMC. This leaves them constantly vulnerable to the vagaries of a buyer's market and high transaction costs.

Despite attempts to expand access through initiatives such as the weaner buying program, IT awareness through SMS and media, and improved availability of inputs through LACs, farmers are still frustrated about issues such as compensation, basic knowledge and equity in pricing and processing. Although the government's effort to increase LAC access through mobile units is to be applauded, a significant proportion of Botswana's farmers living in the Central District's remote rural areas still do not live close enough for one to benefit.

Sales and licensing procedures also pose a significant challenge for Central District farmers. Lack of uniform implementation, a shortage of qualified veterinary staff to oversee sales permits, and technical problems with cattle boluses result in lengthy delays before cattle can be sold. BMC's payments are also sufficiently later than (immediate cash) payments by traders, which make the BMC channel somewhat unattractive.

Farmers sell livestock for a variety of reasons, and not always during periods or seasons that are easily identified, nor matching the seasons outlined by retailers. Similar comments apply to product attributes: value chain actors identify different sets of desirable attributes, and information about quality is still identified as a constraint despite significant efforts on the part of BMC to identify and promote quality for cattle. Weighing of cattle remains rare outside BMC channels and weighing of sheep and goats is almost non-existent. This suggests a need for generation and distribution of market-relevant information in the value chain, and the involvement of extension services in how to use such information.

## Recommendations

The snapshot survey method employed here should be adopted by the Ministry of Agriculture's Department of Agribusiness Promotion to inform its on-going support to producers' business orientation and competitiveness on export and domestic markets. This should be implemented both for discussion groups and survey exercises, in a mutually supportive manner and to allow generation of both short- and long-term data resources.

Farmers should have access to basic livestock management and marketing training, for which available services (such as extension) should be trained. This training could instil the need for understanding available market channels, and empower farmers to be prepared with accurate pricing information before presenting livestock for sale.

Price- and cost-related information on goats and sheep should be made more widely available. Concerns over the costs of feed, particularly expensive high quality feeds associated with fattening, necessitate an emphasis on improved grazing management, which in turn requires improved fencing and associated land management, and training to provide market orientation.

Market-related training could find a place throughout the value chain. This applies to butchery owners/workers, extension officers and farmers regarding service and organization requirements. Another target of training must be the 'herd boys' who are in day-to-day contact with livestock and particularly cattle. The appropriate targets for training should be established by on-going research into management responsibilities.

Officials must explore policies and programs that would reverse the on-going shortage of veterinary and extension officers by training new officers. Private sector participation in such service provision will require a re-design of LACs, and study of the organization is required. Options such as voucher provision of inputs and services might be investigated, possibly with tenders for private sector participation. Further in-depth research on the needs of the local urban and rural markets, as well as more extensive consumer behaviour analysis, is critically important, as this information is key to channel choices. Further, the promotion of use of livestock weights (via tapes and scales) and quality requirements and preferences for both live animals and meat is essential. The appropriate forum for such promotion should be identified, to support efforts by BMC and others.

A number of grievances emerging from this study suggest the need for improved communication mechanisms and procedures. Existing and possible new fora should be investigated for this purpose. An early application should be the new LITS system, which producers blame, via poor implementation of the current format, for their lack of access to export markets and associated low cattle prices.



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# Annex I Report on Serowe workshop

Report of the ACIAR/ILRI/MOA workshop on result dissemination of ‘Survey on smallholder livestock production in Central District of Botswana’

Serowe, 28<sup>th</sup> February 2013

## 1. Introduction

This report presents a summary of the feedback received from farmers at the workshop, ‘A Survey on Smallholder Livestock Production in Central District of Botswana’.

The workshop on survey result dissemination was held at the premises of the Central District Ministry of Agriculture in Serowe on 28 February 2013. It brought together 21 participants—including 17 farmers from the study areas (Taupye, Thabala and Serowe)—to discuss and confirm results presented and develop recommendations.

The workshop agenda featured small group discussions designed to encourage maximum interaction among participants. The morning began with an introduction and overview of the project and survey results. The afternoon session featured a group discussion on final conclusions and policy recommendations.

Participants were invited to discuss and address two main issues:

1.1 What is missing in the information and analysis presented?

1.2 What recommendations or actions do farmers think should be taken in response to their constraints and hopes?

The following report does not contain a chronological record of the workshop, but provides a consolidated summary of the key issues and recommendations that emerged. The list of participants is given in the Annex.

## 2. Objectives

The main objectives of the workshop were to:

- Disseminate and confirm the results from the snapshot survey
- Hear farmers’ views about the survey and missing information
- Gather possible recommendations and policy intervention areas from farmers

## 3. Feedback from participants

3.1 Feedback on the presentation, ‘A survey on smallholder livestock production in Central District of Botswana’.

Some of the comments and feedback on the presentation were as follows:

Prices

Do not reflect sex and different attributes—clarify and specify further

Water

- Issues about trekking animals differ for different farmers and locations
- In some locations: animals trek themselves (no/little labour needed), but in others, trekking animals to the drinking place is common
- Some farmers rent water boreholes in other locations (i.e. have to trek animals to such locations)

#### Labour

- Clarification of labour graphs is needed
- Peak (shown in the graph)—dry season but other seasons there is labour demand?

#### Herd size

- Clarifications needed on pure and local breeds
- Local vs. pure: The 48% vs. 52% margin? reported is 'too close'—some farmers felt that it did not seem reasonable for Botswana

But other participants shared their plans/operations on their make-up of breeds ??

Examples:

Farmer 1: plans to make 1/3 of his herd size local (currently only 5% is local)

Farmer 2: Currently: 90% local

#### Death figures

- Depend on (varies during?) different? periods (season)
- Overall: the figures presented on cattle mortality seem reasonable for the (survey) area

#### Key constraint: Traceability system (bolus)

- A veterinary officer (VO) has to OK (give a permit), but if the VO is not there or something is wrong with the bolus (e.g. bolus isn't readable), farmer(s) cannot sell. Also, double insertion of bolus is common and creates confusion when the machine tries to read the bolus. Bolus is made of very hard ceramic, the same as that used in humans for artificial joints. They are about the size and shape of carrot with a RFID microchip in the middle. Normally bolus are recommended for use in many EU beef supplying nations, as they have hardly any field losses, cannot be criminally tampered with, they are easy to read because they are always in the same place, and they are ideal for saving costs because they can be recycled. However, the limited amount of computers that read bolus in rural Botswana and reusing bolus without deleting the former data are some of the problems farmers face when they sell to the BMC.
- In response to a query about how long farmers in the follow-up session must wait before being able to sell, one farmer replied, 'Years'. But this could be somehow an exaggeration. Some extension officers mentioned during the original survey that if farmers fail to get OK from the veterinary due to technical problems of the bolus or non-availability of veterinary staff, then they ask the village chief to give them permission or to become their witness. However, cattle that pass this procedure don't end up at hands of BMC as the BMC rule does not allow this practice. They added that BMC has its own problems keeping a database of the cattle purchased, in buying livestock that cannot be properly traced. This could be one of the reasons that the majority of farmers in the study area sell most of their cattle to butcheries.
- Waiting period: e.g. if there is an FMD outbreak elsewhere, the veterinary officer (VO) must leave the location. But VO's assistant cannot help in verifying livestock and in giving permits. Hence, farmers sometimes have to wait (up to 6 months to 2 years before selling), particularly if they are selling to BMC. It seems that the transaction cost is high, particularly when farmers want to sell to BMC.
- Livestock feed and input: prices of feed, medicine and seeds are too high

Overall, farmers appreciated the presentation and feedback. But they did stress their opinion that the findings were somewhat non-representative, or specifically some figures are related to current situation of livestock farmers in the country at large.

### 3.2 Feedback from group discussion

Three groups were formed to discuss and respond to two questions noted above. Each group was asked to give three possible answers to each question. However, most of the responses were more related to recommendations or constraints than to missing survey information. Hence responses given when the first question was asked but which related to recommendations or constraints are moved to the second section.

I: What is missing in the information and analysis presented?

Group 1

Marketing of animal by-products such as bile, bellies, hoofs, skins and manure

Group 2

Consumer table—information on consumer consumption patterns including volume make it easy to re-group and target certain market (s)

Group 3

Traceability system (Bolus) problems were not addressed

#### **Question 2: What recommendations or intervention entry points do farmers think are important in response to their constraints and hopes?**

Group 1

1. Government should design 'free market' rules, laws (by-laws) so that farmers and other players can sell livestock to regional and other international markets
2. Ease the LITS operational use and procedures so that it becomes easier to market livestock. Distribute and place loading facilities more strategically.
3. Provide/avail feeds and drugs in all LACs. Most LACs have supply shortages and availability problems.
4. Regulation: need for farmer & consumer 'friendly' laws and by laws

Group 2

1. Develop a smallholder scheme/group that can represent all small livestock farmers, speak with one voice to represent farmers' interests and influence policy.
2. Address problems related to pricing by 'middlemen'. For example, veterinary intervention in terms of pricing through developing some simple scales that can assist in weight and grade measurement. Currently there is little trust in the grading & measurement system
3. Periodic educational training of farmers and 'herd boys'
4. Record keeping in the area—especially on mortality, births, injury and livestock ailments cases.
5. Hygiene in the grazing areas: livestock choose what to eat?

Group 3

1. Establish and build associations for farmers.
2. Farmers should be allowed to sell livestock outside the country, regional markets.
3. Government should look for other market opportunities and not just focus on the EU market (alone).

4. Government should loosen requirements of licenses to business (e.g. if some farmers want to upgrade by engaging in other value addition activities, including further processing, rules should make it easier to do that.
5. Government should go back to the old system of using 'Dikgosi' to resolve livestock theft cases and not magistration.
6. The government should adopt other countries' systems in a smart and contextually relevant manner. The current problems with the LITS and Bolus exemplify what happens systems are copied without consideration of the country specific operational environment.
7. Shortage of veterinary officers (VOs): shortage of VOs exacerbates marketing problems.

## Annex 2 List of participants at Serowe workshop

| <b>Name</b>                  | <b>Location</b> |
|------------------------------|-----------------|
| 1. Kene Kebalepile           | Serowe          |
| 2. Amos Monnapula            | Serowe          |
| 3. Omphile Godirwang         | Serowe          |
| 4. Motshwari Molwantwa       | Serowe          |
| 5. Mpho Mozila               | Mahalapye       |
| 6. Tiroyamodimo Tiroyamodimo | Taupye          |
| 7. Teko Ntwayagae            | Thabala         |
| 8. Bothale S. Selebogo       | Taupye          |
| 9. Baithaedi Nthonyana       | Thabala         |
| 10. Rebecca Thandie          | Taupye          |
| 11. Kebalepile Moganana      | Taupye          |
| 12. L. Nkudu                 | Serowe          |
| 13. E.M. Moganana            | Taupye          |
| 14. M.B. Phatsime            | Taupye          |
| 15. Alec Makgekgenene        | Gaborone        |
| 16. Refilwe Metlhaleng       | Gaborone        |
| 17. H.B. Katjuongua          | ILRI            |
| 18. B. Marobela              | DAR-Mahalapye   |
| 19. Sirak Bahta              | ILRI            |

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