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VEGETABLE MARKETING STUDY

Hopolang Phororo and Gisela Prasad

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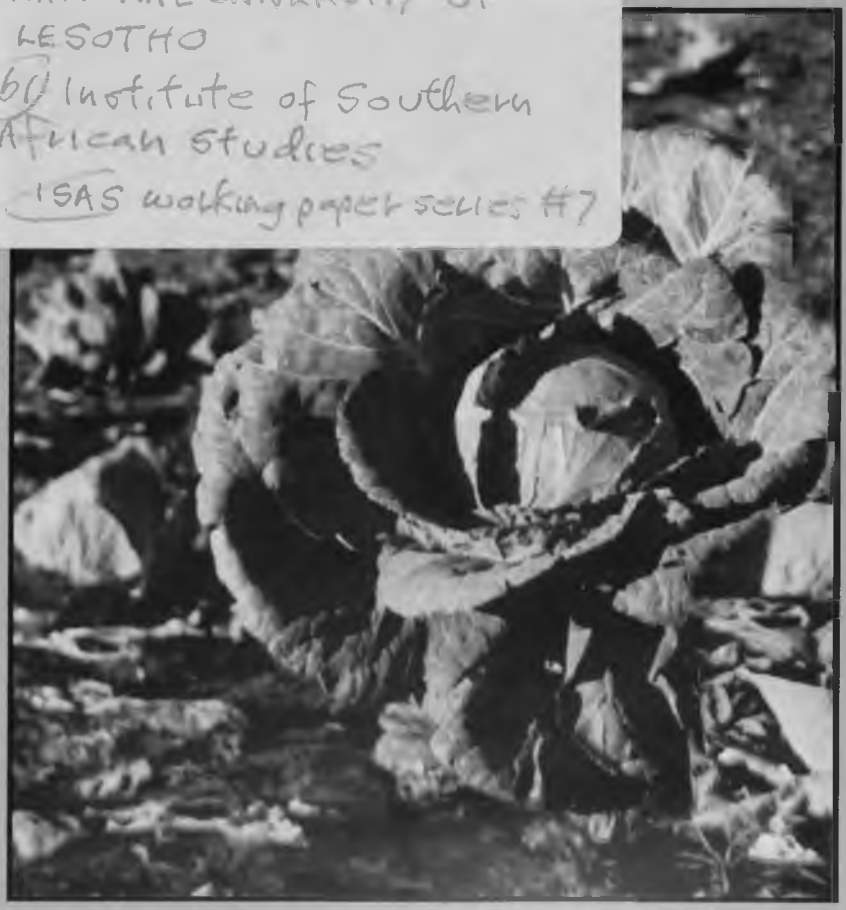

VEGETABLE MARKETING STUDY

for

SEMONKONG RURAL DEVELOPMENT PROJECT

Hopolang Phororo and Gisela Prasad

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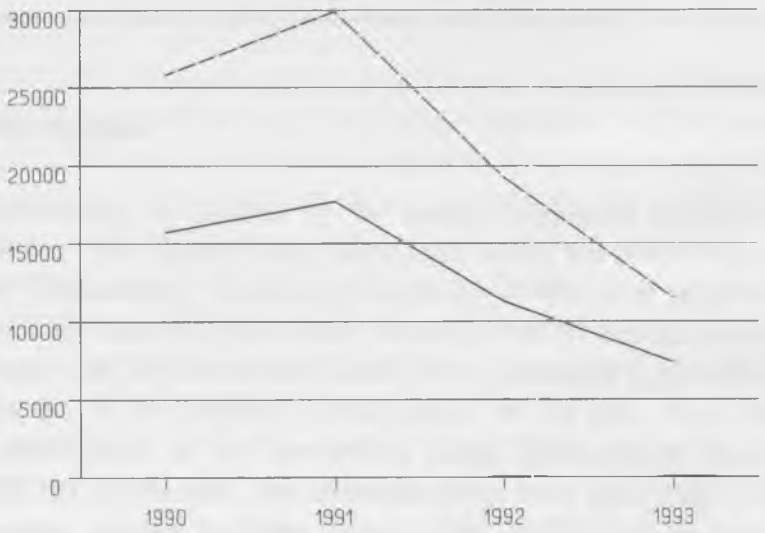
Lesotho Vegetable Imports in Tonnes 1990-1993



---------- Cabbage
_____ Total

Source: Ministry of Agriculture, 1994

Vegetable Marketing Study for Semonkong Rural Development Project

Introduction

Semonkong is situated in the eastern highlands of Maseru district. The project area covers some 490sq km (49000 ha) in the Drakensberg mountains comprising 41400 ha of rangeland and 7600 ha of cultivated land. Between 1984-87 German donors (Agrar und Hydrotechnik GmbH) were interested in the development of the physical infrastructure of the area hence the establishment of the Semonkong Rural Development Project (SRDP). In the past, the mountain areas were used mainly for summer pasture by those living in the foothills and lowlands. However, it was realised that there was potential for livestock and range, crop and fodder, commercial vegetable, horticulture and fruit tree growing.

In the early 1980s, the Government of Lesotho (GOL) became increasingly concerned about the nation's dependence on the Republic of South Africa (RSA) for its horticultural and cereal imports. Vegetable imports from the RSA, which account for 70% of vegetables marketed commercially in Lesotho, are a major factor influencing the domestic vegetable marketing situation. Cabbage is the most important vegetable imported followed by potatoes, tomatoes and onions. However, according to Ngqaleni (1989) Lesotho is capable of attaining 93% self-suffi-

ciency in the production of cabbage, potatoes, onions and tomatoes with 39% of the arable land under irrigation. Therefore, Lesotho's agricultural policy was directed towards realizing the economic potential of the country by improving rural incomes and reducing fruit and vegetable imports. GOL identified weaknesses in the marketing of produce which were major constraints in the development of agricultural production. In 1989, GOL introduced an agricultural marketing policy which aimed at improving production for increased commercialization. The document, *Agricultural Marketing Policy,* (Ministry of Agriculture, 1989) acknowledges that direct and barter sales were inadequate to replace all food imports, therefore an organized system of marketing is necessary to bridge the gap between commercial farmers and producers. The policy identified five areas, to:

1. provide market access;
2. provide incentives and assistance to farmers;
3. protect farmers and consumers from South African imports;
4. define the roles of the government and the private sector; and
5. achieve a nationwide approach towards marketing (Ministry of Agriculture, 1989).

In addition, several irrigation projects for horticultural crops were initiated by GOL and various donors such as USAID, CIDA, EEC, and the Chinese government. In 1988/89 there were an estimated 40 such projects with an irrigation potential of 2800ha in various parts of the country. Part of the area (150-450ha) was used in the production of field crops such as lucerne and wheat while most of it for commercial vegetable production. Smaller developments (5 - 30ha) were intended for exclusive production of vegetables (Ngqaleni, 1989). While emphasis was on increasing production, insufficient attention was given to

marketing. This led to disappointing sales and consequently to disillusionment among producers.

The Semonkong Rural Development Project aims to increase the income of households through improved crops, horticulture and livestock production, to make them independent of any external assistance so that production can be sustainable in the long term. As the area is becoming one of the major vegetable producing areas in the country, the marketing of vegetables within and outside needs to be examined. At present, the greater Semonkong is the largest potato growing area in the country, while the production of cabbage is on the increase. This study will examine the current situation and future prospects for commercial horticulture farmers in the area.

Methodology

Five university students were recruited from the Semonkong area and two from other districts to administer questionnaires and checklists and to lead discussions. Three main instruments were used to extract information on vegetable production and marketing. Detailed questionnaires and checklists, Participatory Rural Appraisal (PRA) techniques and focus group discussions were administered to commercial farmers, home garden producers, traders and consumers. The different techniques were used to complement each other and to check the consistency of the information provided by respondents. A total of 87 questionnaires and 31 checklists were utilized.

The reason for sending students whose homes were in the area as research assistants was because they were trusted and could check the validity of many answers. In addition, they were outsiders to the project and therefore able to solicit information

which would otherwise not have been obtained. Prior to administering the questionnaires and checklists, a pilot survey was done to test the instruments for any inconsistencies. The researchers monitored the research assistants and found that they were familiar with the instruments, and therefore encountered little problems.

Questionnaires

Three types of questionnaires were administered. Appendix 1 was administered to 31 home garden producers and addressed the present production situation, purposes for production, absorption capacity of vegetables in the local market, valley areas and lowland markets, barter trade and storage facilities. Appendix 2 was administered to 22 traders in the sub-centres and Thaba Ntso. No random sampling technique was used because the number of traders is limited therefore the research assistants had to go to most of the shops or cafés. The traders' questionnaire addressed issues such as present sale and purchase of vegetables in greater Semonkong area or surrounding villages, projected buying capacity and a variety of local produce which traders would purchase if they were available. Appendix 3 was administered to 34 consumers. The interviewees were randomly selected as they entered or left a shop and were interviewed on the type of vegetables they purchased, the quantities and why they purchased from the particular shop or café.

Checklists

Unlike with home garden producers, there was no need to collect data on commercial farmers' present production, purposes for

production and the absorption capacity for their vegetables. The data had already been collected by SRDP therefore only a checklist was developed which focused on barter trade (Appendix 4) in which farmers were extensively involved and on storage facilities. The checklist, which was administered to 31 farmers, was concerned with crops bartered, quantities bartered, rates used to barter, storage facilities and types of vegetables stored.

Participatory Rural Appraisal (PRA) and Focus Group Discussions

The research assistants joined in trips to the Senqunyane valley and observed the bartering of vegetables mainly for grain and also took part in some of the transactions, thus appreciating the dynamics involved. They noted that the farmers served an established network of customers.

In the group discussions, price determination and the frequency of bartering with the mountain farmers, communication channels, barter rates and quantities bartered with the valley buyers were discussed. The fact that both buyers and sellers agreed that bartering was on a one to one basis was interesting and seasons did not seem to have any effect on the rates.

Literature Review

Reports from other projects such as Lesotho Agricultural Production and Institutional Support (LAPIS), the Small Scale Intensive Agricultural Production Project (SSIAPP), originally called the Home Gardens Nutrition Project (HGNP) both under the Ministry of Agriculture (MOA) and SRDP were reviewed.

The former two projects were funded by USAID and started in 1987 and 1989 respectively.

Campbell (1991) assessed the financial performance of LAPIS-supported individual small holder producers. These farmers received technical and financial support in the form of loans to purchase seeds and equipment. Indicators such as production input costs and returns, physical input amounts, fertilization rates, varieties used and unpaid household expenditures were taken into account. The majority of the farmers made profits exceeding M1000.00 per hectare per year and those who did not, had according to the LAPIS project, inefficiently utilized their available land.

The emphasis of both projects was to increase vegetable and fruit production, particularly among the people in remote mountain districts and to address the problem of dependency on imported horticultural crops and the improvement of nutrition. Campbell (1991) focused on commercial farmers while the SSIAP addressed home garden producers.

SRDP (1991) presented the results on horticultural trials of certain vegetables in the greater Semonkong area and SRDP (1994), a survey on the production by commercially oriented vegetable farmers. The main purpose of the latter study was to assess the status of commercial farming in the area and whether farmers would appreciate intensive or extensive services. The survey indicated that:

- the majority of the farmers were women (61%);
- about 70% produced in home gardens;
- for 78%, the main constraints were pests, scarcity of water and damage caused by livestock.

All aspects of marketing were essential to commercial production:

- marketing takes place mainly in the villages, with 30% of interviewees selling to Senqunyane and Maletsunyane;
- 66% mentioned problems in marketing;
- the majority stated that they do not produce exclusively to market demand;
- 45% sold only between three to four months per year.

Ngqaleni (1989) examined the fresh vegetable marketing system in Lesotho in order to identify and analyze barriers to effective coordination and to determine how the system can be changed to encourage production. Some of the barriers the author identified were lack of effective communication between wholesalers and farmers; inadequate physical infrastructure and marketing skills of farmers. Four types of vegetables were considered as being representative of Lesotho - onions, tomatoes, potatoes and cabbages. Swallow and Mpemi (1986) presented a complete description of the marketing system for fresh vegetables in Lesotho as a basis for further research.

The data collected in this survey was screened manually and exploratory data analysis was done on it. The results of the data analysis are in Appendix 5.

Present Production

Fresh vegetables are produced in six situations in Lesotho: (i) home gardens, (ii) commercial gardens, (iii) institutional vegetable gardens, (iv) state farms,(v) private commercial vegetable farms, and (vi) vegetable production farms (communal gardens). The focus of this study is on home and commercial gardens in

Semonkong. Home and commercial garden production is generally subsistence-oriented.

Limited information is available on the production and consumption of vegetables in Lesotho. A report by American Ag International (1992) provides information on the production trends for vegetables. The analysis is based on figures extrapolated from a study undertaken by Swallow and Mpemi (1986). The same methodology is adapted to compile trends for Lesotho production in this report as shown in Table 1.

Table 1: Estimated Vegetable Consumption, Production and Imports in tons for 1990-1993*

Year	Consumption	Communal Gardens	Home Gardens	Commercial Production	Total Production	Imports
1990	54829	579	12122	11373	24074	30775
1991	56254	521	10903	10230	21654	34600
1992	57717	1715	17221	16793	35729	21988
1993	59333	2190	21996	21448	45635	13698

* All the annual import figures were obtained from the Marketing Division, Ministry of Agriculture. Consumption figures were obtained from the American Ag (1992) report and consumption was estimated to increase by 2.6% per year. Consumption - imports = total production. The American Ag International (1992) report assumed that commercial production was 47% of total production, home garden production was 48.2% of total production and communal garden production was 4.8% of total production.

Drought conditions during late 1990 and 1991 adversely affected the vegetable production in early 1991, resulting in decreased local production. This increased imports and reduced self-sufficiency in 1991 (American Ag International, 1992). However, in 1992 and 1993, imports decreased and this could have been because of the drought which led to high prices of vegetables.

Although, Table 1 indicates that local production did increase, particularly from home gardens, it cannot be proved because no information is available. If indeed these figures reflect a true picture, the importance of home gardens is increasing and thus contributing greatly to Lesotho's production. In addition, the fact that women (61%) are actively involved cannot be ignored.

Production in the Semonkong area is restricted to one season, summer (December to March) but the agricultural growing season begins in mid-September and ends in mid-April. During winter, production ceases because of the extremely cold weather. The survey indicated that the commercial farmers grew an assortment of vegetables (23 types) whereas home gardens and communal gardens produced a limited variety (13 and 10 respectively).

Table 2 shows the total quantity of vegetables produced by various enterprises in 1993/94. Commercial farmers, home garden producers and communal gardeners commonly grew cabbage, potatoes, spinach, turnip, radish (leaves) and carrots. Beetroot, tomatoes, garlic, maize and onions were grown mainly by commercial producers. The latter had the largest total area, which was oriented towards commercial production. By diversifying crops, the maturing and harvesting of the different products was extended over a longer period of the growing season thus allowing farmers to have some income for most part of the year.

Table 2: Vegetable production in the greater Semonkong area in 1993/94 by type of enterprise

	Home gardens	Commercial farmers	Communal farmers	Total
Total quanitity (tons)	244 464**	160 000*	271 566	657 030
Total area (ha)	9	5	12	26
Number of farmers (gardens)	220	50	652(30)	922(30)

*This is calculated for 100% cabbage only

** The total quantity of vegetables produced by home garden producers in 1993/94 was calculated in the following manner. The individual producers' estimates of the various vegetables produced were added and an average computed. This average was multiplied by 220 home garden producers and results were as follows:

Cabbage	122980
Potatoes	52800
Onion	1100
Garlic	44
Carrots	14960
Beetroot	9240
Raddish	10780
Rape	11660
Spinach	20900
Total	244,464 tons

Pumpkins had not yet been harvested.
Source: Farmers' Responses, Marketing Study, ISAS 1994 and SRDP1992.

In 1992/93, 52% of the home garden producers grew less vegetables than in 1993/94 due to poor rains (24%), labour shortages (9%), pests (6%) and other reasons such as lack of communal gardens, poor soils and the unavailability of seeds.

The majority of producers (89%) planned to grow more vegetables in 1994/95 than in 1993/94. Commercial farmers did not provide figures for the increase in production for bartering to the adjacent valleys (Senqunyane and Maletsunyane). All they indicated was that they planned to increase production and would only be constrained by the weather.

Present Demand

In this study it was found that vegetables were consumed from the home gardens or purchased from traders or other producers. The extent to which the vegetables were purchased from traders or producers was important because it provided an indication of the absorption capacity of locally grown vegetables, once it was determined whether traders sold local or imported produce. The most commonly purchased vegetable was cabbage followed by onions, potatoes and tomatoes, as seen in Table 3.

Table 3: Vegetables most commonly purchased by consumers in the greater Semonkong area in 1994

Vegetables	% of consumers purchasing vegetables
Cabbage	74
Onions	50
Potatoes	50
Tomatoes	44
Carrots	6
Spinach	3

Source: Consumers Responses Marketing Study, ISAS, 1994.

Other vegetables such as carrots and spinach were purchased by fewer consumers. Most of the vegetables (76%) were purchased by consumers from shops/cafes in their respective villages, 21% directly from farmers while 3% grew their own. Demand was strongly seasonal and higher when the farmers did not harvest anything from their own gardens, that is from August to December. Of those consumers who purchased vegetables in the greater Semonkong area, 83% bought 3-20 heads of cabbage and 38%, a 10 kg bag of potatoes per month. Tomatoes and onions were purchased throughout the year with 91 and 100% buying 8 - 20 tomatoes and 1-20 onions per month, respectively.

There was a consistent demand for onions in the area and yet home garden producers grew limited amounts and only 10% of the commercial farmers grew them. A report (Szymala, 1992) on *Horticultural Trials 1991/92* in Semonkong indicated that onion has poor productivity giving a gross output of M8271.00 per hectare and a yield of 5514 kgs (see Table 4). However, the production figures given for vegetables based on the 1991/92 trials were not representative since extreme drought conditions prevailed and inappropriate cultivation methods were used. Under normal conditions, production was much higher although no figures were available. Onion had the potential of playing an important role, particularly for sale in the lowland markets. Garlic was grown by only two interviewed commercial farmers and one home garden producer. The farmers mentioned that they did not market it but used it for home consumption as an insecticide. At present, in the greater Semonkong area, the demand for garlic is nonexistent. The trials indicated that garlic was not a high yielding vegetable but gave exceptionally high returns of M64285.00 per ha therefore has the potential of being an important cash crop. Table 4 shows vegetables with high gross

outputs which farmers could grow in Semonkong for sale in the lowlands. Although these vegetables gave high gross outputs, other variables such as potential market outlets, storage, and availability of seeds need to be considered. In addition and particularly for cabbage, the potential of hybrids which have advantages such as resistance to splitting, suitability for transportation, higher yields and shorter growing periods need to be examined.

Table 4: Yield and gross outputs of different vegetables grown in Semonkong

Vegetables	Variety	Yield (kg/ha)	Gross output (M/ha)
Onion	Texa Grano	5514	8271
Cucumber*	Marketer	50900	101800
Zucchini	Skorsie Verde	36573	54859
Lettuce	Iceberg	20514	30770
Parsnip	Halbl. Student	23721	23721
Garlic		3214	64285

*Cucumber would have to be grown under greenhouse conditions
Source: *Horticulture Trials Report*, SRDP, 1992.

Vegetable price structures

Vegetable production in Lesotho is risky because of extreme price variability and competition from South Africa. Price variability was particularly great from 1989 to 1992 because of the drought. Maseru wholesale cabbage prices ranged from about M3.50 per pocket (15kg) in February 1989 to more than M10.00 in 1990 and from M4.00 per pocket in July 1989 to almost

M16.00 in 1992. Wholesale prices in Maseru were about 50% higher than in the RSA. This means that when Lesotho farmers negotiate with wholesalers, they have to compete directly with prices of RSA wholesale markets and farmers. Therefore to be competitive, Basotho farmers' prices should be at or near RSA prices for similar products (Feaster and Drew, 1992).

However, farmers in Lesotho often receive higher farm gate prices on individual sales than the prevailing wholesale prices. In particular, big general cafés (e.g. Ha Ramabanta, Ha Makhalanyane), which serve large rural areas, as well as government bodies (Royal Lesotho Defense Force) often buy at much higher prices than those prevailing in Maseru. The dilemma is that farmers are reluctant to negotiate lower prices with traders therefore the latter resort to RSA for supply.

Transport costs are both incurred when traders purchase from the RSA and at farms in Lesotho. In fact transport costs in Lesotho can be equal to or even greater than to and from the RSA. This is particularly true for some Semonkong farmers who are inaccessible. During 1994, local Semonkong traders and farmers negotiated a transport fee of M0. 50 per pocket (cabbage and potatoes) to Maseru, which considerably improved marketing from Semonkong. Furthermore, Semonkong commercial vegetable growers organized themselves into associations thereby transporting larger amounts to wholesalers and retailers. The method satisfied lowland traders and made marketing from Semonkong more reliable. The arrangement was at the initiative of the farmers as compared to other projects in Lesotho, which organise and arrange transport for farmers. However, the latter strategy has a sustainability problem once the project ends.

During the research prices did not vary much in the greater Semonkong area because the competition was high. Even with

the barter trade in Maletsunyane and Senqunyane valleys, rates did not vary much seasonally and between farmers. Farmers were quite aware of their competitors' exchange rates and watched the reactions and behaviour closely.

From August to November most traders in greater Semonkong sold vegetables that were from Bloemfontein, but imported via Maseru. Only 6% of the traders purchased directly from Bloemfontein. Only potatoes and spinach were purchased from local farmers because when the traders needed the produce in August to November, local farmers had just planted. (See Table 5). The demand could not be met by local supply therefore traders were forced to import.

Only 19% of the traders purchased carrots and beetroot from December to March. The demand for these vegetables is low during this period because most households harvest from their own gardens. Few traders (22%) purchased potatoes, tomatoes and onions throughout the year but most purchased on a seasonal basis. The volume and prices at which traders purchased vegetables are provided in Table 6.

Table 5: Purchase of vegetables by traders in the greater Semonkong area in 1992/93

Vegetables	% of Traders purchasing vegetables	% of Traders who purchased from Maseru	% of Traders who purchased from Bloemfontein	% of Traders who purchased in greater Semonkong
Potatoes	56	43	-	13
Cabbage	56	50	6	-
Onions	69	63	6	-
Tomatoes	56	56	-	-
Carrots	19	13	6	-
Beetroot	19	13	6	-
Spinach	19	-	6	12
Pumpkin	6	6	-	-

Source: Traders response, Marketing Study, ISAS, 1994

Table 6: Purchase of vegetables in quantities and prices by traders in the greater Semonkong area in 1992/93

Vegetables	Quantities Purchased	Average Price (M/bag)
Potatoes	440 bags (10kg)	8.50
Cabbage	2590 bags (25kg)	9.00
Onions	389 bags (10kg)	10.60
Tomatoes	655 boxes (5 kg)	12.65

Source: Traders responses, Marketing Study, ISAS, 1994.

Marketing Capacities and Channels

Producers in Semonkong grow vegetables for home consumption, market for cash and barter. The produce is routed to consumers through a number of marketing channels but the most

common practice is the direct producer - consumer exchanges. The vegetables are either sold for cash to consumers in the greater Semonkong area directly from farm sites or transported to the lowland towns by vehicles or to the Senqunyane and Maletsunyane valleys by donkeys or horses and exchanged for other types of produce.

Home Garden produce

While home gardens are mainly for consumption, the majority (58%) of producers also barter and sell for cash, regardless of the smaller quantities involved as compared to those of the commercial producers. In 1992/93, the home garden producers of onions, garlic and tomatoes consumed all of them. Most producers (69%) of cabbages, potatoes, carrots, beetroot, radish and spinach consumed 70 - 100% and marketed 0 - 30% for cash in the greater Semonkong area and/or bartered in the valleys. This finding confirms the point that most producers grow mainly for consumption. The remaining 31% percent of the home gardeners produced for commercial purposes on a limited scale.

Table 7: Home garden producers' purposes for production

Purpose	% of Farmers
Home consumption	29
Home consumption + market for cash	10
Home consumption + market for cash + barter	58

Source: Producers responses, Marketing Study, ISAS, 1994.

In 1993/94, 90% of the commercial farmers interviewed were actively involved in the barter trade in the Maletsunyane and Senqunyane valleys. This compares well with the survey by SRDP (1994) which indicated that 84% of the farmers were involved in barter trade. Cash sales are also important for 95% of the farmers. Home consumption exists on a limited scale (SRDP, 1994).

Table 8 shows that the most important vegetables bartered were fresh and dried cabbage and potatoes. In most cases, large cabbages were bartered. Medium sized and small cabbages were marketed in the greater Semonkong area and in the lowlands. Substantial quantities, particularly of cabbage and potatoes were bartered considering that 1992/93 was a drought year.

Table 8: Percent of commercial farmers in Semonkong bartering vegetables by quantities in the Maletsunyane and Senqunyane valleys in 1992/93

Vegetables	% of Farmers bartering	Quantity (kgs)*
Potatoes	40	10920
Cabbage (dried and fresh)	48	9854
Peas	4	60
Sorghum	2	340
Total		21174

* The quantity is the summation of individual farmers' estimates of bartered vegetables in 1992/93. The quantities bartered were actually higher than the total value given because 6 the farmers interviewed and who were engaged in barter did not provide the quantities that they barter.

Source: Farmers Responses, Marketing Study, ISAS, 1994.

As was the case with home garden producers, cabbage and potatoes were the most widely bartered. One farmer indicated that it was better to barter dry cabbage for cereals because competition was less. These vegetables were bartered mainly for sorghum (43%), maize (27%) and peas.

The Barter Trade

Both home garden and commercial and producers in greater Semonkong are involved in the barter trade mainly along the valleys such as Ha Khotso, Ha 'Malane, Hloahloeng, Mokopung (Senqunyane) and Ngoana-Thoana, Luka, Lephotho and Ha Ntja (Maletsunyane). Because of the different climatic conditions in the greater Semonkong area and the Senqunyane and Maletsunyane valleys, producers in the former have an advantage over the farmers in the latter in the production of cabbage and potatoes. The valleys are also so remote that they have practically no other access to these vegetables. Generally the costs associated with bartering of goods are high because a "double coincidence of wants" does not exist. This is a situation where one party has an excess of good A and wants to exchange it for good B. This person must search for someone who has an excess of B and needs A. The searching process is costly but in the case of Semonkong farmers, costs are reduced because they want sorghum and maize while the valley farmers want vegetables. Specialization, which is so important in increasing output, is encouraged in these two zones. A brief description of the bartering arrangements gives an insight into how farmers have effectively disposed of their produce in the inaccessible valley markets. Two steps are involved in the barter arrangement. First, the consumers in the valleys are informed of the availability of vegetables. Various

channels are utilized such as extended family, agents, letters or social functions (church) are used. Fifty percent of the farmers use the family network. Then the buyers' respond to the availability of vegetables.

The majority of farmers (40%) did not respond as to when bartering took place. However, 19% indicated that bartering takes place from May to July while 14% mentioned that it is from December to March. Farmers make several trips to transport their produce for sale. The first option is that the buyers in the valleys travel to the commercial farmer's village to barter cereals for vegetables. In this case the valley farmers are sometimes given discounts when they travel to the mountain villages (often a day's trip on a donkey or horseback). The second option is that the mountain farmers travel to the valleys and sell vegetables along the way and reserve some for "special orders". The farmers make this trip yearly and serve established customers and a few new ones, continually extending his/her trade networks. The farmers (16%) usually barter on credit because vegetables have a shorter growing period and when they are ready for sale, cereals have not yet been harvested. Once the cereals are harvested, the mountain farmers either send herdboys to collect the produce or the valley buyers will deliver the produce to the mountain farmers' villages. The third option is that the mountain farmers deliver the produce by herdboys to the extended family or agents, who store and then sell the vegetables for the farmers. They are paid a commission which is usually a fixed amount e.g a 10kg bag of potatoes or 5% of the quantity sold in cash or produce.

In the Maletsunyane and Senqunyane valleys, where the bartering of vegetables for cereals takes place extensively, interesting exchange rates have evolved. The units used range from bowls [*sekotlolo sa kulo* (2kg bowl), *sekotlolo sa sheleng* (10kg

bowl)], 5 or 10 litre tins, to 10 or 25kg bags and individual heads of cabbage. When asked how they barter, 30% of the home garden producers and 58% of the commercial farmers mentioned that they bartered on a one to one basis, i.e. 25kg bag of cabbage or potatoes for a 25kg bag of sorghum or a 2kg head of cabbage for 2kg bowl of sorghum. In some cases, the producers and farmers barter (19 and 7% respectively) as follows: a 20 litre tin of potatoes for a 10kg bag of maize or sorghum or a 5kg head of cabbage for a 5 litre tin of sorghum or maize. Several different measures are used and according to producers and farmers they are trading on an equal basis. The attractiveness of Semonkong producers bartering in the valleys can also be seen when the units of exchange are converted into monetary values. For example, one head of cabbage (2kg) bartered for a 2kg bowl of sorghum would mean that the producer gets M2.60 for his cabbage, compared to approximately M1.00 obtained if sold within the Semonkong area and M0.50 sold in the lowlands. The point about these measurements is that they are not comparable, particularly where volume and weight are used because they are two different units. In addition, the type of products bartered differs therefore, a one to one exchange rate is not applicable in these situations. A 25kg bag filled with potatoes weighs less than a 25kg bag of sorghum or maize. Therefore farmers exchanged produce on a one to one basis by volume.

From one perspective, it would seem that someone is getting an unfair deal in these transactions. The Semonkong farmers are enthusiastic about bartering in the valleys and are the ones who are possibly getting the better deal. However, since the bartering process has been going on for years, both parties must be satisfied and it would be insensitive to conclude that unfair exchange rates

are used. The bartering trade is based on trust and mutual agreement.

Traders as Market Outlets for Home Garden Producers and Commercial Farmers

Both home garden producers and commercial farmers sell vegetables directly to consumers and traders in the surrounding villages. According to the 1994 report by the SRDP Project, commercial farmers (66%) mentioned that marketing is a problem and that they do not produce according to market demand. Gardening starts in mid-September and vegetables are ready for harvesting at the same time therefore the demand, particularly for cabbage, tends to be low. Extension services on commercial production started in 1993/94 and only 36% of the producers indicated a problem of excess local supply in summer because of high production. It is possible that the decrease in farmers who mentioned marketing problems is a result of the SRDP's extension services. In addition, production and the variety are better adjusted to market demand (personal communication, SRDP Project, 1994).

However, a survey of traders revealed that 13 traders (see Table 9) have the capacity to purchase additional vegetables available. The traders purchased the following amount from the local farmers: cabbage (40 bags of 25kg), potatoes (19 bags of 10kg) during winter and spring and tomatoes (26 boxes of 5kg) in 1994.

There is no demand for vegetables from traders' shops in Ha Samuel therefore the traders did not feel the need to stock them. Imports are highest from the third quarter (July - September), which is winter when most vegetables cannot be grown in Lesotho. Imports are lowest during the first quarter when sum-

mer production is high. Estimates of 1991 quarterly import volumes for major vegetables are shown in Table 10.

Table 9: Potential traders by type and location in the greater Semonkong area

Name	Type	Village	Sub-Centre
Atamelang General Cafe	Retailer	Ha Lepae	Semonkong
Tloung Shopping Centre	Retailer	Ha Leteketa	Semonkong
Thabang Bafokeng Cafe	Retailer	Ha Phallang	Semonkong
Fraser	Supermarket	Ha Leteketa	Semonkong
'Mamakoanyane Moqolo	Retailer	Ha Sechache	Semonkong
'Malebitso Ntsoeli	Retailer	Ha Sechache	Semonkong
'Malebitso	Retailer	Ha Leteketa	Semonkong
N.J. Thorn & Co.	General Dealer & Restaurant	Tsenekeng	Tsenekeng
Emelang General Dealer	General Dealer & Restaurant	Ha Moahloli	Tsenekeng
Boikhethelo General Dealer	General Dealer	Ha Moahloli	Tsenekeng
Monyaka Kolobe	Retailer	Ramosothoane	Tsenekeng
Mokhabinyane Cafe	Retailer	Tsutsulupa	Tsutsulupa
Nonyana Mpitsa Cafe	Retailer	Tsutsulupa	Tsutsulupa
Matebele General Cafe	Retailer	Morainyane	Tsutsulupa
Thabong General Dealer	Retailer	Ha Salemone	Tsutsulupa

Source: SRDP, 1994.

Table 10: Preliminary estimates of vegetable imports by quarter in tons for 1991

Vegetable	Jan - March (1st quarter)	April - June (2nd quarter)	July -Sept (3rd quarter)	Oct -Dec (4th quarter)
Cabbages	2016	1897	9788	4019
Potatoes	1021	3425	3251	1572
Tomatoes	829	795	1399	1143
Onions	387	355	577	276
Carrots	275	120	219	227
Beetroot	146	37	122	101

Source: MOA Marketing Division Border Surveys, MOA, 1992

Commercial farmers in Semonkong are unable to supply the lowland markets with cabbages, onions, carrots and beetroot in the third and fourth quarters. Potatoes are already traded in the third quarter. However, the possibility of supplying the market with potatoes and cabbages exists if storage facilities are available. Because, no such facility exist Semonkong producers have to concentrate on the first and the second quarters to market and build storage facilities for their produce.

In Maseru District, there are about 180 wholesalers and retailers. Although there is a direct road from Semonkong to Maseru, only a limited number of markets along the road can be considered potential outlets for its horticultural produce. A list of potential traders is provided below. Other cafés are not listed because information is not available, even though they might have reasonable turnovers and serve a bigger rural area. Other possible traders could be located in Mazenod, Thaba Bosiu and Masianokeng.

Table 11: Potential traders, type and location in the lowlands

Name	Type	Location
Masoabi Cafe	Retailer	Ha Ramabanta
Cafes/Restaurants	Retailers	Ha Moitsupeli
Cafes/Restaurants	Retailers	Roma
Mocha-o-chele	Retailers	Ha Makhalanyane
Cafes/Restaurants	Retailers	Masianokeng
Amelia Spar	Retailer	Lekhaloaneng
Ntate Poone	Wholesale	Maseru
Upper Qeme Fresh Produce	Wholesale	Maseru
LNDC 1	Wholesale	Maseru
LNDC 2	Wholesale	Maseru
Mafafa Supermarket	Retailer	Maseru
Spar 1	Retailer	Maseru
Spar 2	Retailer	Maseru
Maseru Cafe	Retailer	Maseru
Mocheni	Retailer	Maseru
Frasers Ltd	Retailer	Maseru
DS Supermarket	Retailer	Maseru
OK Bazaars	Retailer	Maseru

Source: SRDP, 1994.

Apart from wholesalers and retailers, there are a number of hotels and institutions such as the National University of Lesotho (NUL), hospitals and schools, which are regular customers for large amounts of vegetables. The hotels are Maseru Sun Cabanas, Lesotho Sun, Victoria Hotel, Lakeside Hotel, and Auberge (restaurant). The hotels, restaurants, Spar and OK Bazaars can be regarded as the main customers of garlic and asparagus.

Gross margins from selling vegetables in the lowlands are low in the adjacent valleys and in the greater Semonkong area (see Appendix 6). Commercial farmers benefit the most because of the volumes and variety of vegetables they produce.

Table 12: Gross margins of commercial farmers selling vegetables in the lowlands, local villages (greater Semonkong area) and in the adjacent valleys in Maloti per hectare

	Cabbages	Potatoes	Carrots	Beetroot
Bulk sales to lowland markets	10003.00	3983.00	18348.00	13660.00
Local village sales	46997.50	10933.00	26534.00	19760.00
Barter trade with adjacent valleys	36997.50	9058.80		

Source: SRDP, 1994.

Table 12 shows that potatoes generate the lowest gross margins in all the markets and this is because of the high cost of growing them. The total variable costs (TVC) account for more than half of the value of production in the lowland markets, substantially reducing the gross margin (see Table 13). In the local villages and adjacent valleys, the TVC accounts for 27 and 40% of the value of production. This is the result of the high cost of potato seeds which account for 45, 55 and 38% of the total variable cost in lowland markets, adjacent valleys and local villages, respectively indicating that the cost of producing potatoes is relatively high (Appendix 6).

Transport cost of cabbages and potatoes to the lowland markets is low, because of the organization of associations. Transport accounts for 25 and 15% of TVC for cabbage and potatoes and

83 and 75% for carrots and beetroot. Packaging is an additional cost as commercial farmers sell vegetables in the lowlands. Cabbage and potato bags account for 50 and 19% of the TVC (Appendix 6).

The quantity of vegetables sold in the greater Semonkong area and in the adjacent valleys is much lower than that the lowlands. There is no transport cost because vegetables are sold directly from the fields or gardens. The total variable costs are therefore lower and profits higher for farmers who sell in the surrounding villages. Only potatoes and cabbages are sold in the adjacent valleys. Although potatoes generate low returns, there is a great demand for them. The transport costs account for 32% of the TVC which is reasonable when compared with 91% of the TVC for transporting cabbages (Table 13).

Table 13: Commercial farmers' value of production and total variable costs of different vegetables, 1994 in Maloti

	Bulk sale in lowland markets				Local village sales				Barter trade with adjacent valleys	
	Cabbage	Potatoes	Carrots	Beetroot	Cabbage	Potatoes	Carrots	Beetroot	Cabbage	Potatoes
Value of production*	15000.00	9000.00	19950.00	15000.00	48000.00	15000.00	26600.00	20000.00	45000.00	15000.00
Total variable cost	4997.00	5017.00	1596.00	1340.00	1002.50	4067.00	66.00	240.00	11002.50	5942.00
Gross margin in Maloti per hectare	10003.00	3983.00	18348.00	13660.00	46997.50	10930.00	26534.00	19760.00	36997.50	9058.00

* The production figures for lowland and local village sales and barter trade are extrapolated from 0.1 hectare to 1.0 hectare for comparison.

Source: SRDP, 1994

Need for Additional Communal Gardens

Seventy four percent of the communal garden members and non-members interviewed would like to establish more communal gardens in the future. The reasons vary from wanting to increase production to the fact that the existing communal gardens cannot support all interested people in the villages. Table 14 provides the most important reasons for additional communal gardens. Nine percent want more gardens so that contributions can be made to purchase fencing because it is cheaper to fence communal rather than individual gardens and therefore production can be increased without fear of damage by livestock or theft.

Table 14: Communal members and nonmembers' reasons for additional communal gardens

Reasons	Percent of Responses*
To increase production	28
To generate income	12
Home gardens are too small	12
Can contribute to purchase fencing	9
Want to be able to feed animals	9
Existing communal gardens do not	9
accommodate all people	9
Other (e.g. can have a garden throughout the year, to provide space for youth)	25

* Total response add up to more than 100 percent because of multiple response.

A smaller percentage (25%) of respondents does not intend to establish more communal gardens. Nine percent said that more communal gardens are unnecessary because those that had been established are no longer being utilized - either the people are not interested, fences have been destroyed by the animals, clashes amongst members, or mismanagement. While 6% do not want any more communal gardens because of personality conflicts and another 6% feel that then fields are much larger than the communal garden plots. It is therefore better to concentrate on field production.

Generally, additional communal gardens are necessary in the Semonkong area to increase production and to give more people the opportunity to participate. However, one problem that was mentioned more than once was that the chiefs failed to allocate fields for communal gardens, particularly in good areas, that is, close to a water source.

Storage Facilities

The majority (64%) of the commercial farmers interviewed had storage facilities. The 36% who did not, sell their vegetables directly from the fields. However, the storage facilities comprised a room in their dwelling houses or dug out pits. The storage capacity for 65% of those who stored vegetables ranged from 0 to 32m^2. (The farmers usually mention floor space). The average height of a storage room is 220m.

The storage loss was much greater in summer than in winter and it ranged from 1 to 30% for half of the commercial farmers interviewed. In winter, the storage loss ranged from 1 to 10% for 14% of the commercial farmers and the rest had no loss. Because of the cold winter, some vegetables stored for as long

as seven months but in the summer the longest they can be stored is 4½ months. However, the majority stored vegetables for 1 to 6 weeks in summer and for up to 12 weeks in winter. The most common vegetables stored in winter and summer are cabbages and potatoes (Table 15).

Table 15: Most common vegetables stored by commercial farmers in summer and winter

Vegetable	Summer (percent of response)	Winter (percent of responses)
Beetroot	9	-
Cabbage	18	18
Carrots	9	-
Potatoes	23	14
Onions	-	9

Given the limited storage capacities of the commercial farmers, 68% of them mentioned that as associations they intend to establish storage facilities. The type they wanted varied, the most common (37% of commercial farmers) was a building with certain characteristics such as ventilation, space, compartmentalized for the specific vegetables and protected from rain. Nine percent mentioned that the Coop Lesotho building in Semonkong or the Basotho Canners buildings at Masianokeng could be suitable for the farmers' needs. Another 9% mentioned that a cold storage was necessary. Fifty percent whose associations intended to establish storage facilities mentioned that the capacity should range from 12-200m^2.

The commercial farmers proposed that they would be responsible for the establishment of the storage facilities. Eighteen

percent said that the SDRP could provide advise and supervision and the farmers would be responsible for the building. Twenty seven percent indicated that they could contribute money and get the necessary building materials for the building. Other farmers (14%) had been involved in negotiations concerning the cooperative building in Semonkong or the building in Masianokeng so they were awaiting a response. The commercial farmers suggested that the Association would employ one or two people to keep records of farmers' produce delivered and sold. This storage facility would act as a market for buyers from Maseru and other places.

The commercial farmers were optimistic about the future. Ninety percent of them were confident about increased production because the SRDP had empowered them with knowledge and taught them to be independent. Eighteen percent of the 90% were concerned with marketing and lack of inputs. However, some felt that they could organize collective transport and look for markets. The farmers suggested that the government could establish a depot for seeds and other inputs.

Conclusion

The general objective of the Semonkong Rural Development Project is to increase income without making the farmers dependent on outside assistance. This economic marketing survey is to enhance local people's potential to find markets and deliver their produce. The well established barter trade in Semonkong clearly shows the capacity of the farmers to find and expand their own markets.

In Semonkong 675 030 kg of vegetables were grown on an area of 26 ha in 1993/94. Communal gardens produced 271 566 kg

on 12 ha, home gardens grew 244 464 kg on 9 ha and commercial farms produced 160 000 on 5 ha. There are 220 home gardens, 50 commercial farms and 30 communal gardens with 652 members. The communal gardens had the lowest kg per ha ratio (22 630 kg/ha), the commercial farms had the highest (32 000 kg/ha) and the home gardens were in-between (27 162 kg/ha).

The home garden vegetables are grown predominantly for consumption (55%), a small amount (25%) is traded locally and 20% is bartered with the valley areas. The most common vegetable traded locally (16%) and bartered (20%) is cabbage although potatoes are also popular (12%). For 95% of the commercial farmers cash sale of cabbage is the most important. Ninety percent of the commercial farmers also barter, 35% barter cabbage and 29% potatoes. The vegetables are bartered mainly for sorghum (43%) and maize (27%). Both commercial farmers and home garden producers see the valleys as potential markets for increased production. Quite recently sales to lowland markets have increased.

The study has shown that there are potential markets for increased vegetables production from the greater Semonkong area. Four market areas with different potential can be distinguished: greater Semonkong area, Senqunyane and Maletsunyane valleys, east and south of greater Semonkong, markets on the road to Maseru, e.g., Ramabanta, Roma, Mazenod and Maseru.

The vegetable imports from South Africa were 13 698 tons in 1993. Much of this can be substituted by produce from Semonkong. In 1993/94 Semonkong farmers marketed and bartered 330 tons of vegetable that is about 2% of the imported amount. Cabbage is by far the most widely consumed vegetable. The total cabbage import in 1993 was 7 460 tons. In the same year the

Semonkong farmers produced 523 304kg of cabbage, or 7% of the imports. As there are other cabbage growing areas and projects, it is estimated that the farmers in Lesotho could supply a substantial part of the imported cabbage. A similar reasoning can be applied to the potato market.

The onion (881 tons yearly import, carrot (304 tons) and beetroot (358 tons) markets in Lesotho are much smaller. However, the gross margins of carrots and beetroot for bulk sale to the lowland markets are very much higher than those for cabbage and potatoes. Semonkong could capture a substantial percentange of this market. The farmers could produce more onions, carrots and beetroot provided prices are competitive.

Under the present production pattern the market in the greater Semonkong area has almost reached it absorption potential and very little additional vegetables can be sold. There is market potential in the Senqunyane and Maletsunyane valleys and farmers are actively exploring it. The largest potential markets are along the road to and in Maseru. However, bulk sales to these two markets realize relatively low profits. Also farmers have to form groups or associations to organize large quantities, grading, packaging and transport. Successful and sustained access to those markets will largely depend on how the farmers manage and mobilize community support for this enterprise.

Commercial farmers achieve the highest gross margins for sales in the local market and adjacent valleys with cabbage has the highest gross margin followed by carrots, beetroot and potatoes. In the barter trade with the valleys the gross margin for cabbage is four times higher than that for potatoes.

There is a potential to sell more vegetables during the winter and spring months when people consume vegetables imported from South Africa. In order to have produce available at that time

either storage facilities have to be built or drying has to be more widespread or both. Stores can be simple, because the low temperatures in Semonkong favour preservation. However, very few farmers store and dry produce at the moment.

The majority of commercial farmers (64%) had limited, very basic storage facilities. They intended to address the issue of storage in their associations. They are also negotiating the use of the existing cooperative buildings in Semonkong and Masianokeng for storing their produce.

Storage loss was 1-30% and was naturally much higher in the warm summer months than in winter.

Recommendations

1. To strengthen growers' associations for effectively marketing and transporting cabbage and potato to the lowland markets. Once the Semonkong farmers have learnt to access and service the lowland markets throughout the year, growing areas could be increased according to the market demands. Also to stress the importance of quality control.
2. To explore lowland markets for Semonkong carrot, onion and beetroot. If successful, the growers' association can be strengthened so as to handle the transport and marketing of onions and carrots.
3. To increase the barter trade in cabbage and potato. Farmers are managing the barter trade very well and it is clear that it is best left to the local communities to carry on in the tried and trusted traditional way. Outside intervention might upset the intricate structures and agreements which have grown over decades .
4. To facilitate the establishment of new communal gardens. To make members of communal gardens aware that increased

production can be achieved by intensifying vegetable growing in the existing gardens.

5. To encourage farmers and their associations to either negotiate or build storage facilities for their produce.
6. To teach farmers different ways of storing vegetables and pest control in stores by using local, indigenous knowledge and materials as a starting point.

References

American Ag International, (1992), *Report on Transfer of LAPIS Project Assisted Marketing Activities to the Ministry of Agriculture Marketing Division*, LAPIS Project, Maseru, Lesotho.

Campbell, J. (1991), *Vegetable Economics in Lesotho: An Assessment of Intermediate Level Production of High Value Vegetable Crops,* Ministry of Agriculture, Maseru, Lesotho.

Ministry of Agriculture, (1989), *Agricultural Marketing Policy for Lesotho*, Maseru, Lesotho.

Ministry of Agriculture, (1992), *Marketing Division Border Surveys*, Maseru, Lesotho.

Ministry of Agriculture, (1994), *Marketing Division Border Surveys*, Maseru, Lesotho.

Ngqaleni, M. (1989), "A Vertical Systems Analysis of Vegetable Marketing in Lesotho", MSc. thesis, University of Saskatwen, Saskatoon, Canada.

Ngqaleni, M. (1992), "Vegetable Production and Marketing" in Storey G (ed) *Agricultural Marketing in Lesotho*. International Development Research Centre, Ottawa, Canada.

Reinberger, G. (1994), "Report on potential marketing of fresh vegetables from Semonkong to the lowlands of Lesotho" (Draft), Semonkong Rural Development Project, Maseru, Lesotho.

Semonkong Rural Development Project, (1994), *Report on Survey amongst Commercial oriented vegetable producers: Present situation,* Maseru, Lesotho.

Swallow, B and Mpemi, N. (1986), *The Marketing System for Fresh Vegetables in Lesotho*. Research Report No 10, Institute of Southern African Studies, Roma, Lesotho.

Szymala, T. (1992), "Horticultural Trials 1991/92: Evaluation and Recommendations." *Semonkong Rural Development Project,* Maseru, Lesotho.

APPENDIX 1

Questionnaire for Home garden producers

The Semonkong Rural Development Project (SRDP) (commercial horticulture section) prepared a list of 220 home garden producers in the Semonkong sub-centres. No previous research had been undertaken on home gardens to determine their production potential. A representative random sample was taken of 31 home garden producers distributed in the following manner:

Sub Centres	Number of producers	Percent of producers
Semonkong	10	32
Ha Samuel	4	13
Tsenekeng	7	23
Tsutsulupa	10	32
Total	31	100

The questionnaire is as follows:

SURVEY OF HOME GARDENS

NAME OF INTERVIEWER: _____
DATE OF INTERVIEW: _____
PLACE OF INTERVIEW: _____
SUB-CENTRE: _____

PROFILE OF INTERVIEWEE

1. District:_____
2. Village: _____
3. Gender:_____
4. Age:_____
5. Marital Status: Single _____ Married _____
   Divorced _____ Separated/Deserted _____
   Widowed _____
6. Level of Education _____
7. Occupation _____
8. How many people live in Household?_____
9. Related to Household head: Spouse_____ None: _____
   Child _____ Relative: _____ Household head _____

10. Sources of income (Tick where applicable)

Migrant worker wages	
Locally employed where	
Income from sale of farm produce	
Chickens	
Eggs	
Ducks	
Milk	
Pork	
Wool	
Mohair	
Mutton	
Beef	
Fruits	
Vegetables	
Field crops	
Other (specify)	

PRODUCTION AND MARKETING

1) Provide estimates of the vegetables produced during the 1993/94 and the purpose for production.

Vegetables	Estimates		Purpose (Estimates %)		Season (monthly)
	Total area	Production in kg	Home	Market for money	
Potatoes					
Cabbage					
Onion					
Garlic					
Carrots					
Beetroot					
Others (specify)					

2) a) Do you use the total area for vegetable production during winter?
Yes _____ No _____ Sometimes _____

b) If no, why not?

c) Do you store any of the winter vegetables?
Yes _____ No _____

d) Do you use the total area for vegetable production during summer?
Yes _____ No _____ Sometimes _____

e) If no, why not?

f) Do you store any of the summer vegetables? Yes _____
No _____ Sometimes _____
If yes, why? _____

3) Where were the following vegetables marketed during the last season 1992/1993?

Vegetables	Greater Semonkong area			Adjacent valley, e.g. Senqunyane, Maletsunyane		
	Qty	U. Price	To whom	Qty	U. Price	To whom
Potatoes						
Cabbage						
Onion						
Garlic						
Carrots						
Beetroot						
Other (specify)						

Vegetables	Lowlands		
	Qty	U. Price	To whom
Potatoes			
Cabbage			
Onion			
Carrots			
Garlic			
Other (specify)			

4) a) Do you encounter any problems marketing your vegetables
Yes _____ No _____

b) If yes, what are the problems? _____
_____

5) If you do not market any of the vegetables, why not?_____
_____
_____

HOME GARDEN FARMERS

Production Trends

1. a) Did you grow less _____ / same amount _____ /more _____ vegetables last year?
   b) If you grew less or more vegetables, why?_____

2. a) Do you intend to grow less _____/same amount _____ /more _____ vegetables next year?
   b) What will affect your decision?
   _____

3. a) Do you grade the produce that you sell?
   Yes _____ No _____
   b) How would you grade your produce i.e.
   Potatoes _____
   Cabbage _____
   Onion _____
   Garlic _____
   Carrots_____
   Beetroot _____

4. a) If you barter your produce, what do you barter them for?
   _____
   b) How much do you barter for e.g. 1 pocket of potatoes for 1 bag of maize?
   _____

5. a) Would you like to see more communal gardens established?
   Yes _____ No _____
   b) Why?_____
   _____

APPENDIX 2

Survey of traders

Sub-centre:_____
Village:_____
Name of business or trader:_____
Type of business:-Retailer_____
- Supermarket _____
- Wholesaler _____
- Other(specify)_____

1) What quantities of vegetables have you purchased and sold in 1992/93?

Vegetables	Purchase				Sale			
	From	Qty	U. Price	Which months	To	Qty	Estimated Shelf Life	Which months
Potatoes								
Cabbage								
Onion								
Garlic								
Carrot								
Beetroot								
Other								

2) How do you determine the selling price of vegetables?

_____
_____

3) a) Do you have storage facilities: Yes _____ No _____
   b) If yes, to 3(a), what is the storage capacity for vegetables (quantities)?

      _____

   c) What vegetables do you store?

      _____

      _____

   d) What is the storage loss (quantities)?
   e) How long do you store?
4) What do you do with the stored vegetables?
   a) Sell _____
   b) Consume _____
   c) Feed to animals _____
   d) Give away _____
   e) Other _____
5) If you sell the stored vegetables, how do you determine the price of them?

   _____

   _____

6) Do you have the capacity to buy more vegetables if there are any available:
   No _____ Yes _____
   If yes, what kind of vegetables would you purchase and the estimated quantities:

   _____

   _____

7) Do you have access to transport facilities:
   No _____ Yes _____
   If yes, what kind _____

APPENDIX 3

Questionnaire for consumers

1. What vegetables do you buy?

2. How much of each vegetable do you buy per month?

   _____

3. What quality of vegetables do you prefer?

   Large_____ Medium _____

4. Why do you buy from this shop?_____

   - Quality e.g. freshness, size_____

   - Good price _____

   - Polite _____

   - Good taste_____

   -Variety _____

   - Other (specify) _____

APPENDIX 4

4. Checklist for Commercial farmers

The checklist was administered to 31 farmers who were distributed as follows:

Sub-Centre	Number of Farmers	Percent of Farmers
Semonkong	6	19
Ha Samuel	5	16
Tsenekeng	5	16
Tsutsulupa	10	32
Thaba Ntso (Maletsunyane)	5	16
Total	31	100

The 31 were selected from a list of commercial farmers identified by the SRDP. The research assistants used the snowballing techniques, where one farmer would suggest a commercial farmer who was also actively involved in the barter trade.

The checklist is as follows:

1. a) Do you have storage facilities? _____
   Yes _____ No _____
   b) Capacity?
   c) What vegetables do you store? _____
   d) What is the storage loss? _____

e) How long do you store? _____

2. What do you do with stored vegetables? _____
_____
3. How do you determine the selling price?
_____
4. Where do you barter? _____
5. What do you barter? _____
6. The amounts bartered? _____
7. What are they bartered in exchange for?_____
8. What do you do with exchanged products?_____
9. When do you barter? _____
10. What are the bartering arrangements?_____

APPENDIX 5

Survey Analysis - Home Garden Producers

1. Household Profile

Household Head: Male 57% Female 43%

Occupation: Farmer 63%, Housewife 40%,
Forest Ranger 3%, Chief 3%, Manager 3%

Education: Never attended school 13%, Primary School 57%,
Junior Certificate 7%, Teachers' Certificate 3%,
Secondary School 3%

Sources of Income: Migrant Worker wages 26%,
Local employment 43%, Sale of livestock and livestock
products 67%, Sale of tobacco 3%, Sale of vegetables 40%,
Sale of field crops 16%, Sale of home brew 16%,
Sale of wood 3%, Rental of horses 3%

Marital Status: Married 70%, Widowed 27%, Single 3%

2. Production

In 1992/93, producers grew: less 52%, more 32%,
same 13%, nothing 3%

In 1994/95, producers, plan to grow: less 3%, more 89%, same 6%, nothing 2%

Majority grew less because of: poor rain 24%, labour shortage 9%, poor soil 3%, seeds unavailable 3%, pests 6%, late in planting 3%

Production in summer: yes 77%, no 19%, sometimes 2%

Production in winter: yes 10%, no 80%, sometimes 10%

Total area planted and production:

	m^2	kg
Potatoes	111	240
Cabbage	230	559
Onion	50	0.5
Garlic	18	0.2
Carrots	57	68
Beetroot	83	42
Radish	67	49
Rape	30	53
Pumpkin	140	not harvested
Spinach	65	95
Maize	50	20
Turnip	19	not harvested
Tomatoes	90	13

3. Marketing

In 1992/93, did you: consume at home yes 85%, no 15%, market for cash yes 52%, no 48%, barter yes 16%, no 84%

In 1993/94, did you: consume at home yes 90%, no 10%, market for cash yes 42%, no 58%, barter yes 52%, no 48%

On average, do you barter? yes 58%, no 36%, sometimes 6%

Where do you barter? Greater Semonkong -, Lowlands 4%, Adjacent valleys 12%

Where do you market for cash? Greater Semonkong 42%, Lowlands 3%, Adjancent valleys 8%

How do you barter? 1:1 cabbage, potatoes, pumpkin = cereals 39%, other 5litres = 5kilograms 19%

Produce is bartered for: maize 17%, sorghum 25%, peas 3%, lentils 2%, wheat 5%, beans 2%.

Is marketing a problem? yes 47%, no 3%

What are the marketing problems? too much supply 36%, transport 10%, financial constraints 4%.

4. Storage

Do you engage in summer storage? yes 55%, no 39%, sometimes 6%.

Do you engage in winter storage? yes 19%, no 81%.

Purpose of storage: consumption during spring 40%, sell during scarcity 5%, protection from frost and animals 7%, clear land for winter planting 3%.

5. Communal Gardens

Do you want more communal gardens? yes 74%, no 26%,
Why more communal gardens? support 29%, security 12%, increased production 10%, are usually on fertile ground 2%, usually bigger area to plant 2%, source of income 5%, nutrition 5%, encouraged by Project 5%

Why less communal gardens? plot size is too small 3%, no cooperation 10%, home garden is adequate 7%, bad administration 3%, no time 3%

6. Grading

Do you grade your vegetables? yes 48%, no 52%,

How do you grade them? by size 32%, by appearance 48%

Survey Analysis Commercial Farmers

1. Marketing

Do you barter? yes 77%, no 23%

Average quantities bartered (kgs): Potatoes 10920, Cabbage 9134, Wheat* 400, Peas 60, Sorghum 100

*wheat was bartered for vegetables by a farmer from Thaba Ntso

Types of produce bartered: Potatoes 29%, Cabbage 35%, Peas 5%, Wheat 2%, Sorghum 2%

*Barter rates**

1kg of potatoes or cabbage or peas, or lentils = 1kg of cereals** 58%
1kg of potatoes or cabbage or peas or lentils = 2kg of sorghum 13%
1kg of potatoes or cabbage or peas or lentils = 1 litre can or bowl of cereals 7%
*Sold using bags and bowls and inidividually.
**maize, sorghum, wheat
What are they bartered for? Maize 25%, Sorghum 40%, Beans 5%, Wheat 5%, Cabbage 2%

Purposes for bartered produce? Home consumption 53%, Local sales 24%

Transport mode Senqunyane 36%, Horses 23%, Vehicles 3%

When bartering takes place: December - March 14%, May -July 19%, No response 40%

When bartered? Senqunyane 36%, Matsieng 2%, Mazenod 2%, Mafeteng 2%, Semonkong 7%, Tsutsulupa 2%, Maletsunyane 30%

Bartering arrangements

Informing consumers: Family network 39%, Social functions 12%, Letters 15%, Consumers alert mountain farmers 12%
Travel to valleys: Farmer travels to valley 67%, Buyer goes to mountain villages from valleys 10%,
Agent is paid 5% of the consignment in cash or produce 11%
Agent is paid produce 66%
Credit terms offered 12%

2. Storage

Storage facilities: Store room 29%, Dug pit 10%, In dwelling house 20%, In fields 4%, No storage 37%

Storage capacity (square metres) 1 - 50 18%, >50 3%, 1.5*1.5*1m 3%, No response 36%

Vegetables stored: Cabbage 15%, Potatoes 10%, Turnips 3%, Carrots 2%, Beetroot 3%, Maize 2%, Wheat 4%, Barley 4%, Lentils 3%, Beans 4%, Peas 5%, Spinach 3%

Survey Analysis Traders

1. Marketing yes 59% no 41%
Where do you purchase from? Maseru 80%, Bloemfontein 7%, Semonkong 13%

Quantities purchase (1992/93): Potatoes (10kg bags) 440, Cabbage (25kg bags) 2592, Onions (10kg bag) 389, Tomatoes (5kg boxes) 655, Carrots (2kg bundles) 182, Beetroot (2kg bundles) 112, Spinach (2kg bundles) 75

Purchase price (1992/93): Potatoes M8.50 per bag, Cabbage M9.00 per bag, Onions M10.60 per bag, Tomatoes M12.65 per box

Which months sold? For cabbage, potatoes: Aug - Nov 50% For carrots, beetroot, tomatoes: Summer 28%
For potatoes, tomatoes, onion: All year 22%

Who do you sell to? Local consumers 84%, Other traders 16%

Do you have transport? yes 94%, no 6%

2. Storage

Do you have storage facilities? yes 25%, no 75%

Storage facilities: (square metres) 1-100 84%, Not sure 16%

Survey Analysis Consumers

1. Consumption

Types of vegetables bought: Onions 50%, Cabbage 74%, Potatoes 50%, Tomatoes 44%, Carrots 6%, Spinach 3%

Where purchased? Local shop/cafe 76%, Local farmers 21%, Do not purchase 3%

Quantities purchased per month: Cabbage (Aug - Nov) 6 * 80kg 4%, 1 * 10kg 13%, 1-20 heads 83%

Potatoes (All year) 1 * 5kg 25%, 1 * 10kg 42%, 1-20 potatoes 33%, Tomatoes (All year) 10-20 tomatoes 91%, >20 tomatoes 9%, Onions (All year) 1-20 onions 100%

APPENDIX 6
Gross Annual Margin Analysis of Garden Crops (0.1 hectare)

Local (village) sale					
	Cabbage	**Potatoes**	Carrots	**Beetroot**	
Units					
Heads	-	-	-	-	
Bundles	-	-	2600	2000	
Bags (10kg)	-	150	-	-	
Bags (~15kg) -cabbage	400	-	-	-	
Yield in (kgs)	6000	1500	2660	2000	
Price per kg[1]	0.8	1.00	-	-	
Price per bundle	-	-	1.00	1.00	
Value of production	4800	1500	2660	2000	
Seeds	Amount in kg	0.025	200	0.3	0.8
	Price per kg	22.00	1.13	22.00	30.00
	Value	0.55	266	6.60	24.00
Fertilizer Manure	Amount in kg	800	800	-	-
	Price per kg	0.08	0.08	-	-
	Value	64.00	64.00	-	-
Chemical plant protection Malthion	Amount in kg	1.05	-	-	-
	Price per kg	34.00	-	-	-
	Value	35.70	-	-	-
Antracol	Amount in kg		0.6	-	-
	Price per kg		32.00	-	-
	Value		19.20	-	-
Potato Bags	Price per bag (10kg)	0.65	-	-	-
		97.50	-	-	-
	Value				
Total variable Costs		100.25	406.70	6.60	24.00
Gross margin per ha		4699.75	1093.30	2653.40	1976.00

1. Price is based on average local prices.

Bulk sale to lowland markets				
	Cabbage	**Potatoes**	**Carrots**	**Beetroot**
Units				
Heads	-	-	-	-
Bundles	-	-	26600	20000
No of bags (10kg)	-	1500	-	-
No of bags (~15kg) -cabbage	167	-	-	-
Yield in kg	2500	150000	26600	20000
Price per kg	-	0.60	0.75	0.75
Price per bag[2]	6.00	-	-	-
Price per bundle	-	-	0.75	0.75
Value of production	15000	9000	19950	15000

Seeds	Amount in kg Price per kg Value	0.025 600 150	2000 1.13 2260	3.00 22.00 66	8.00 30.00 240
Fertilizer Manure	Amount in kg Price per kg Value	8000 0.08 64.00	8000 0.08 64.00	- - -	- - -
Chemical plant protection Malthion	Amount in kg Price per kg Value	10.5 34.00 357	- - -	- - -	- - -
Antracol	Amount in kg Price per kg Value	- - -	6.0 32.00 192	- - -	- - -
Potato Bags	Price per bag (10kg) Value	- -	0.65 975.00	- -	- -
Cabbage Bags	Price per bag Value	1.00 2500	- -	- -	- -

2. Prices based on average wholesale prices (Maseru).

Transport to Maseru	Price per bag Value	0.50 1250	0.50 750	0.5/10kg 1330	0.5/10kg 1000
Hired labour (6h/day)[3]	No. of days Daily Rate Value	20 5.00 100	40 5.00 200	40 5.00 200	40 5.00 100
Total variable Costs		4997	5017	1596	1340
Gross margin per ha		10003	3983	18348	13660

Barter trade with adjacent valleys		
Crop	**Cabbage**	**Potatoes**
Bundles		
Bags (10kg)	-	150
Bags (~15kg) -cabbage	400	-
Yield (kg)	6000	1500
Price per kg[4]	0.80	1.00
Value of production	4800	1500

3. Casual l labour hired during peak times (e.g. harvesting).
4. Price is equivalent to 1kg of sorghum.

Seeds	Amount in kg Price per kg Value	0.025 22.00 0.55	200 1.13 226
Fertilizer Manure	Amount in kg Price per kg Value	800 0.08 64.00	800 0.08 64.00
Chemical plant protection Malthion	Amount in kg Price per kg Value	1.05 34.00 35.70	- - -
Antracol	Amount in kg Price per kg Value	- - -	0.6 32.00 19.20
Potato Bags	Price per kg (10 kg) Value	- -	0.65 97.50
Transport to Valley	Price per load[5] Value	5.00 1000	5.00 187.50
Hired labour (6h/day)	No. of days Daily Rate Value	1 5.00	1 5.00

5. Transport is by donkeys, 1 donkey = ~10 head of cabbage or 4 potato bags.

APPENDIX 7

COMMUNAL GARDENS

This questionnaire should be administered to communal gardens

1. Does your village intend to set up more communal gardens?
   Yes _____ No _____

2. If yes, why?_____
   _____
   _____
   _____
   _____
   _____

3. If no, why not?_____
   _____
   _____
   _____
   _____

APPENDIX 8

STORAGE FACILITIES

This questionnaire should be administered to commercial farmers.

1. Do you have storage facilities? Yes _____ No _____
2. Capacity _____
3. What is the storage loss? During summer:_____
   During winter:_____
4. What vegetables are stored? During summer: _____
   During winter: _____
5. How long do you store them for? During summer:
   During winter: _____
6. Does your organization/association intend to establish storage facilities in the future?
   Yes _____ No _____
7. What kind of storage do you think is necessary?_____
   _____
   Capacity: _____
8. How do you propose that it can be done?_____
   _____
   _____
9. You started production with the German project, once their activities terminate next year, what do you expect for the future? _____
   _____
10. What will you do without them?_____
    _____

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