

Samoa Domestic Market Study:

*Assessing the effectiveness of current domestic market
data collection to determine the likely impact of
increased vegetable production*

Edwin Tamasese

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All  Agricultural Commodities Programme



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List of Abbreviations

MAF	Ministry of Agriculture and Fisheries
SDS	Strategy for the Development of Samoa
SBS	Samoa Bureau of Statistics

Executive Summary

An assessment has been made of the market structure in Samoa in regards to the Fruit and Vegetable sector in particular. The main areas of assessment were the types of participants involved in the market, the methodologies and practical data collection models used to measure market performance, as well as the likely impacts on the market should increases in production occur. This was with the overall intention of indicating how effective the current domestic market data collection system is in Samoa and the accuracy data for use in informing policy design, implementation and monitoring.

The overall finding of the study suggests that expanded data collection beyond the current scope of a single market centre (the Fugalei Market) is necessary to ensure accurate data is collected on the markets, particularly if this data is to be used effectively in policy formulation. It is also recommended that an auditing framework is put in place to monitor the efficacy of data collection and to ensure maintenance of data collection standards.

1. Introduction

In October 2010 an activity was initiated by the Food and Agriculture Organisation with the aim of demonstrating to policy makers the importance of collecting and using good quality data on domestic markets (including indicators such as price and volumes, market structure in terms of channels and the functionality of those channels). At the end of this workshop a decision was made to undertake four case studies that would demonstrate the usefulness of market data for policy makers. This is the report for one of the studies that has been commissioned to look at the Samoan domestic vegetable market and in particular, to identify the determinants of price and the absorptive capacity of local markets for two important crops – tomatoes and head cabbage. Subsequently on collation and analysis of this data/information, to look at how this translates into effective policy.

The study addresses two key policy questions:

1. Are current market data collection methods providing a basis for effective policy making?
2. What are the likely impacts of increased vegetable production on the Samoan market as a whole given the current structure?

2. Evaluation Framework

Overall approach

An initial scoping to determine the structure of the Samoan domestic market involved a desktop review of available data. In particular the review focused on the following:

- Data on existing markets and market distribution points.
- Existing formal data collection points (e.g. Central Bank, Bureau of Statistics)
- The current use of existing data collection in the formulation of policy (interviews with Ministry of Agriculture – Crops Division)

Following this, a physical review of the markets was carried out. This included;

- Touring of both islands to determine market structure and logistics through sighting of various retail outlets.
- Interviews with participants in the various market channels to determine general behaviour patterns in terms of volumes traded, frequency of trade

(e.g. some stalls although permanent fixtures in villages are infrequently stocked) and factors influencing pricing.

Evaluation methodology

In order to capture the required data, interviews were conducted at all points in the value chain. Specifically these include:

- Input suppliers
- Producers¹
- Wholesalers/retailers
- Policy makers

For each of the value chain steps interviews were conducted to determine the following information:

1. Statistics on production and production trends, and in the case of policy makers, how this data collection relates to policy development.
2. The collection points required to make data meaningful to policy makers evaluating the performance of a value chain in relation to policy interventions.
3. The way in which demand and supply interact to determine pricing in the Samoan context.
4. The implications of supply/pricing movements to the various stakeholders and in particular small holder farmers.

3 Review of the existing market structure

Production structure

From the perspective of production the current structure comprises the following types of producer:

- a. Intermittent subsistence with overflow sold on the market (meaning that the grower only participates in the market when an excess supply situation occurs which is not as a result of a planned production activity). This type of

¹ Producers in the Samoan domestic market typically participate not only as wholesalers but also retailers

producer will typically produce crops of not more than 15 to 20 units of head cabbage or 15 to 20 bags of tomatoes once or twice per year. The producer will use opportunistic sales and may walk the produce through the village to sell it, or put it on a small stand such as that mentioned in section 4.2 (Distributor structure type “a”), or on-sell to a middle man trader.

- b. Small commercial producer where small volumes of produce are planted (less than a quarter acre) to cater for both domestic use and commercial sale in a planned manner. Typically will produce 15 to 20 units of either head cabbage or tomatoes or both for each of 4-5 crops per year. Sales channels are similar to those mentioned above, but this producer will also make the effort to transport to one of the three formal government markets for sale.
- c. Medium farms (quarter acre up to 2 acres) where producers are targeting commercial sales with planned production. Generally the producer will be focused on a few key commercial crops and will have informal trading relationships with large retail chains. Typically produce will be continuously harvesting on a daily basis depending on weather, disease and seed availability factors, resulting in harvests of approximately 80-100 units per day, 6 to 7 days per week.
- d. Large farms (5 acres to in excess of 100 acres). Focused on specific crop types, these farms will typically have formal supply arrangements/contracts with wholesalers and manufacturers or Government organisations such as the national hospital, or NGO’s such as Women in Business Development Inc. Generally they have the same output as the medium type farmer but will produce a much wider variety of crops.

Distributor structure

The following is the structure of distribution/retail/wholesale in the Samoan market.

- a. Farmer direct to consumer - this can take on several forms:
 - Sale from farm gate using a semi-permanent stall (i.e. only operational when stock is available).
 - Sale from formal outlets such as the two government markets based on the two main islands of Upolu and Savaii or from store fronts of traders who allow such activity.
 - Sale from farm gate from a permanent farm gate store. In this scenario the farmer typically has a small commercial operation supplying their permanent store but also purchases from other

farmers. From interviews conducted, some of the permanent stores (although they call themselves farmers) fall under class “a” type farmers or intermittent subsistence farmers acting more as middle men.

- b. Farmer to secondary processor. Typically products are supplied in an informal supply arrangement based on the needs of the processor (although Samoa’s only feed mill is using contract growing for cassava root). Farmers will however plant specifically to supply a processor. This market often fluctuates, based on pricing as manufacturers generally pay the lowest price for raw materials. According to manufacturers interviewed, they typically experience a market where, during various parts of the year, they will have excess supply while in others there is no supply of certain root crops in particular. The excess supply often occurs when there are requirements to meet obligations such as school fees, major annual church events etc. Suppliers of product will also sell into alternative markets when pricing improves.
- c. Farmer to retailer – Established relationship. This is an informal arrangement created by commercial efficiency of the farmer. Of the farmers interviewed one farmer has a standing relationship with several large retail outlets for the supply of lettuce. On interviewing these retailers, they maintain this relationship due to the consistency of supply and quality. Consistency of supply dominates over price in this relationship.
- d. Farmer to retailer – Intermittent relationship. This is a situation where farmers will supply on availability or in some cases where they have excess supply. There is generally no loyalty to the supplier and a tendency to move/buy on price only. Personal relationships with the retailer also play a part in this market scenario, although the dominant decision mechanism is price.
- e. Established retailer. These retailers are medium to large retailers who offer fresh fruit and vegetables as part of their range.
- f. Middle men. After a survey of the Fugalei market in January 2011, it was established that 98% of the vendors selling were middlemen or middlemen farmers². These middlemen often partake in an established wholesale market where farmers will sell to them in bulk on a regular basis. They are also

² Middlemen farmers are individuals who grow their own produce but also purchase crops from other farmers in bulk to then break down and sell themselves from either the main markets or their own permanent fruit and vegetable outlets.

opportunistic buyers and will buy leftover produce from intermittent day traders.



Figure 1: A market vendor in Salelologa Savaii selling a mixture of both local and imported produce at the main market.



Figure 2: The above shop is mainly a fruit and vegetable outlet but also supplies other general retail consumables such as rice, sugar and flour etc.



Figure 3: The above stalls are another form of permanent stall with an intermittent nature in what is available. It is generally stocked from produce from the farmer only and is subject to what he has available for sale on the day.



Figure 4: This permanent Fruit and Vegetable stall in Faatoia village is supplied by the farmer as well as deliveries from mobile farmer distributors.



Figure 5: This is an example of a vegetable outlet in a large supermarket with a mixture of domestic and imported vegetables.

4. Current Framework for data collection and use

The information gathering framework that relates to the formulation of policy in the sector is outlined below.

Central to the success of information gathering is the Samoa Bureau of Statistics (SBS). The SBS collects data on domestic vegetable and fruit production every Friday from the central Fugalei market, which is one of the three main municipal markets. This is an activity which was formally performed by the Central Bank.

The SBS is also responsible for the collation and provision of information to various departments. For example, they are monitoring the export volumes of taro for the Department of Agriculture. They do this by collecting the export data from the Ministry of Revenue, Customs division and entering it in their central database. This information is then relayed to the Policy and Planning division of the Ministry of Agriculture.

One of the questions put to the SBS was in regard to the relevance of the data collected from the Fugalei market every Friday to the broader market due to the development of a significant number of alternative outlets. The SBS is currently in the process of performing a trial weekly survey at Salelologa market in Savaii to determine how comparative the volumes and pricing are with Fugalei market. Asked if this would be a regular feature for domestic market data collection the ACEO said that due to cost this was unlikely. He did mention that from their experience the central Fugalei market governs pricing which is reflected at other outlets. Statistics to support this view were however unavailable.

The assumption made by SBS that the Fugalei market generally governs prices in the broader market is important to note because this data is used to generalize overall performance of the market. However, with the significant and growing number of alternative outlets, the validity of this assumption comes into question.

5. Domestic market survey

Based on the initial review of the domestic market structure in Samoa it was clear that there is a significant probability that the current collection methods for data on the domestic market may be insufficient to be representative of the wider market activity. To evaluate this, the form used by the SBS to collect data at Fugalei was used to collect data from a wider range of domestic outlets for head cabbage and tomatoes. Each outlet monitored was also asked about how prices were set.

In addition to the Fugalei market survey conducted by the SBS on Fridays, the following market outlets were surveyed on the same day over a period of six to eight weeks:

1. Farmer Joe Fruit and Vegetable department (representing the large commercial retailers) typically moving 20-30 medium units of head cabbage per day and 15-20 packets of tomatoes through 3 outlets. On Fridays and Saturdays this volume usually doubles.
2. Lynn Netzler (representing the medium size commercial retailers) typically, on a per store basis, moves the same volume as Farmer Joe with the same Friday and Saturday increases in volumes traded.

3. Faatoia roadside fruit and vegetable stall, representing the fruit and vegetable stands as per Figure 4., orders 20 head cabbage and 20 packets of tomatoes per week.
4. Salelologa market in Savaii typically moves 300 head cabbage and 150 packets of tomatoes per week.

The above outlets give a sample of what is estimated to be approximately 30% of the total outlets. The type of specific data collected was similar to SBS Fugalei survey and included the price per unit, the weight of a unit and the number of units available for sale.

A sample of three units was weighed where a scale was available (Farmer Joe and Lynns). At the Faatoia and Salelologa market the size according to informal standards of small, medium and large was used with the medium unit used as the base for Head Cabbage. An estimate of the typical weight of a medium cabbage or bag of tomatoes was used for Faatoia and Salelologa.

6. Survey Results³

Table 1 below lists the average of the data collected. This data is an average of data collected weekly from each of the individual outlets, then averaged out over a month.

Based on the results of the survey it is observed that Fugalei market tended to exhibit most volatility in pricing. This was followed by slight variation in pricing at the Faatoia roadside stall. In contrast, the large and medium retail outlets and Salelologa market held consistent pricing throughout the survey period. The most likely reason

³ The government statistics use weight as the measure to quantify pricing. This creates an issue as there is no correlation between weight and selling price for local vegetables. They are sold on the perception of size or in set quantities which are used as the basis of pricing. For example tomatoes are sold in packets. These can be either of the roma variety or a round slicer tomato. Depending on the variety pricing will vary as well. In order to maintain consistency, all tomatoes priced from the alternative markets used the roma tomato pricing per packet under the assumption that the packet holds 2 pounds.

Head cabbage is also sold on size rather than weight. There is a traditional range of sizes around which pricing is set. The capacity to price effectively is based on the farmer or middleman's knowledge of the buying habits of his/her customers and the appropriate pricing based on the volumes available. In order to maintain consistency for measurement with other outlets the average size head cabbage was taken as the pricing point.

Table 1: Head Cabbage and Tomato volumes and prices at five market outlets

Month	Outlet	Cabbage price \$	Cabbage units sold*	Tomato price \$	Tomato units sold*
Mar	Farmer Joe	3	150	5	50
Mar	Lynn Netzler	3	150	5	50
Mar	Faatoia Stall	3	120	5	30
Mar	Salelologa Market	3.5	na	6	na
Mar	Fugalei Market	2.9	2371	6.19	56
Apr	Farmer Joe	3	150	5	50
Apr	Lynn Netzler	3	150	5	50
Apr	Faatoia Stall	3	120	3.5	30
Apr	Salelologa Market	3.5	na	5	na
Apr	Fugalei Market	2.61	2026	3.89	350
May	Farmer Joe	3	150	5	50
May	Lynn Netzler	3	150	5	50
May	Faatoia Stall	3.6	120	5	30
May	Salelologa Market	3.5	na	6	na
May	Fugalei Market	3.6	2774	6.06	133
June	Farmer Joe	3	150	5	50
June	Lynn Netzler	3	150	5	50
June	Faatoia Stall	2.5	120	4	30
June	Salelologa Market	3.5	na	6	na
June	Fugalei Market	2.13	3332	4.11	230

*Volumes sold through outlets other than Fugalei market are taken as estimates based on interview with outlet owner/purchasing officer. Unfortunately only pricing was collected from Salelologa market. Fugalei market data is based on Government Statistics.

for the stability in pricing in the other outlets can be attributed to this being the dry season which is the main growing period for these crops. To get a better measurement of pricing variation a longer term 12 month survey would be required

to measure how demand and supply would affect retailers outside the Fugalei market.

In an attempt to better understand the results, interviews were also carried out with vendors at the different outlets to clarify their pricing policies. Interviews with Lynn Netzler, who held stable pricing throughout the entire period, determined that she holds her price at a point that she knows the customers always buy. She is not too concerned with spoilage as she utilizes excess produce in a range of cooking products. From previous experience dealing with this retailer, lower prices can be negotiated when increases in supply from farms are creating significant waste for farmers. This is a hands-on process which needs to be followed through with her staff for a price reduction to occur.

In contrast, according to the vendor at the Faatoia outlet, pricing is largely governed by the prices at the Fugalei market as they will occasionally resort to purchasing from vendors at this market. If prices are too high at the Fugalei market they will often not purchase. In addition to this, particularly in the case of tomatoes, they grow some of their own which supplements their market stall requirements. They are also very aware of the prices that their customers are willing to pay for certain sizes of cabbage for example. If the Fugalei market price exceeds the price that they can sell at, including a suitable margin, then they will not stock this item. Another trend that the stall owner mentioned was the now common trend to have farmers (medium and large scale farmers) dropping by in vehicles on a daily basis with produce for sale.

For the Salelologa market the consistency in pricing is, according to the data collector, related to supply. Importers from the main island of Upolu also impact pricing although supply from Upolu is generally very limited. This results in a relatively static price as shown by the survey results. It is clear however with the price premium that is currently paid in Savaii that increased production should reduce pricing in general.

For the Fugalei market however, pricing volatility is very likely related to the close proximity of stalls within a concentrated area that rapidly responds to increases and decreases in supply due to higher competition. There is also the issue of using weight rather than size. This leaves the results highly susceptible to variation depending on the quality of the produce. For example, well-nourished plants are generally heavier but may be consistent in physical size which means errors in pricing variations are very likely. In interviews with stall holders the basic guide for pricing is governed by an unwritten size to pricing standard. Inspection of prices and competing stalls is observed, with prices held within a competitive range. Bargaining deals are an important part of the retail environment in the market with deals for larger buyers

usually being struck through either price reduction per unit or with orders being sold with free units added on.

8. Accuracy of current data collection models

Under the current data collection system price variation as recorded in the government statistics is largely related to a single market scenario (the Fugalei market) and is not reflective of the wider market in general for the period in which the data was collected. The value of the Fugalei market data is as an indicator of the broader market in terms of the price setting mechanisms. This is mainly in terms of how increased production will be the major determinant of pricing. In this respect standard economic laws do apply where increased production should see a corresponding notable reduction in price on saturation. There is therefore no evidence of price collusion or “artificially” structured pricing created by mechanisms that work outside of a standard economic model.

In addition using the Fugalei market data as an indicator of overall market volume traded is problematic as show by the data presented in Table 2.

Table 2: Volumes through four market outlets in June 2011

	Head Cabbage pieces	Tomatoes packet
Fugalei	3332	230
Lynns	150	125
Farmer Joe	150	125
Faatoia Stall	120	110

For instance, during the June collection period, in total more tomatoes were traded through the three alternative outlets than through the Fugalei market. As the surveyed alternative outlets only form approximately 30% of total outlets that trade vegetables this suggests that using Fugalei market data to assess the availability would give a serious underestimate. This also applies to head cabbage, although to a lesser degree.

Another important point regarding an assessment of the accuracy of the government collected statistics is what appears to be incorrect data on the number of sellers of produce at the Fugalei market, particularly for head cabbage. As a verification exercise on the accuracy of the government data, two inspections where carried out to determine the actual number of sellers compared to that shown in the government statistics.

With government statistics moving from a low of average 6 to a high of average 10 sellers on any given data collection month (average) these same numbers could not be validated. After both days of the verification survey, the average number of sellers was 4.5. In an interview with the largest seller of head cabbage who has been selling at the Fugalei market for over 2 decades (Westerland family) there are only at most 6 sellers in total of head cabbage at the highest point of the season. This would suggest that an audit of the methodology used to collect the government data is required.

8. Capacity of market to absorb increased production

Using the Fugalei market as a basis it is clear that increased production will mean a reduction in unit prices for tomatoes and head cabbage at a certain point in time. For example the Fugalei market data shows the following trends from pricing to volume in 2011:

Table 3: Head cabbage and tomato volume – price relation*

Volumes in Lbs				
	March	April	May	June
Head Cabbage	2371	2026	2774	3332
Tomatoes	56	350	133	230

Pricing				
	March	April	May	June
Head Cabbage	2.9	2.61	2.17	2.13
Tomatoes	6.19	3.89	5.13	4.11

*Pricing is tala per lb.

Head cabbage sales pricing indicates that saturation point occurs at around 2774 lbs. This is suggested due to the percentage drop in pricing between May with 2774 lbs supplied and June with 3332 lbs supplied. When comparing the volume changes and related pricing changes between April to June on reaching 2774 units despite an additional increase to 3332 units there is no significant change in pricing. An interesting point regarding the saturation point is the comments from the Fugalei distributor who is currently purchasing his head cabbage from Joe Maposua (one of the two large commercial sellers at the Fugalei market) which are delivered to his stall. This clearly indicates market saturation for head cabbage forcing larger commercial farmers to resort to deliveries to dispose of excess stock.

In regards to the tomato market, saturation is a bit harder to gauge according to available data. According to a Fugalei market stand operator, when the market is really bad farmers are selling at \$3.50 per packet. In reviewing the Government statistics and comparing a packet of tomatoes that generally contains approximately

1.5-1.8 pounds of tomatoes, this would suggest a price of around \$1.75 per pound at the bottom end of the market.

Using the government data it can be suggested that there is a price ceiling per pound irrespective of availability of around \$6/lb This assumption is made based on the price differential between the four months surveyed where despite a significant lack of supply in May; the price remained at \$6.19 for the 56 available pounds of tomatoes compared to the other months.

9. Implications of increased production for different stakeholders

On the basis of the above analysis of market data, it is possible to draw some tentative conclusions as to how any increases in production that may result following the implementation of the Fruit and Vegetable Sector Strategy might affect producers, traders and consumers of head cabbage and tomatoes.

Income implications for farmers if increased production is achieved

Should farmers in Samoa with support from the Fruit and Vegetable Sector Strategy manage to increase production, current indicators show that there is a requirement for improved distribution logistics into the broader market to enable efficient market distribution. Of particular note in this regard is the growing number of roadside stalls in Samoa such as the one included in this study. It is quite clear from the Fugalei market sample that economies of scale will play a major role in determining the success or failure of farmers' survival in the market space. For example two farmers dominate the head cabbage market (John Maposua and Ricky Westerland) at Fugalei. There is a smattering of smaller farmers who intermittently compete with them, but pricing is largely controlled by competition between these two farmers. This may be an indication of why the pricing for head cabbage is relatively stable unlike tomatoes which tend to swing quite dramatically from high to low. It would also suggest that in terms of the Fugalei market head cabbage is saturated and increased production will severely impact prices and incomes at this outlet.

Tomato prices on the other hand swing quite dramatically as mentioned above. In interviews and inspections of the larger commercial farms run by the two farmers mentioned above, there is significant scope for improvement of techniques for tomato production to ensure consistency and to a degree quality of produce. This is the general case with most farms in Samoa where tomato production is concerned.

Based on this, improved production should create price stability such as that experienced by head cabbage. This should ensure a consistent average price and therefore more stable income platform for farmers in general.

Another benefit, based on the inspection of farms, could be the reduction in negative environmental impacts due to farming techniques currently being utilized. This is assuming that the Fruit and Vegetable Strategy promotes environmentally favourable techniques to increase production.

Implications for traders if increased production is achieved

Traders in the market such as Lynn's, Farmer Joe and the Faatoia outlet share one complaint about domestic supply and that is consistency. According to Lynn Netzler from Lynn's and David Trafford from Farmer Joe, they are unable to get a consistent supply of tomatoes or head cabbage with distributors only typically turning up when a saturation situation occurs in the Fugalei market. There is also the issue with quality which causes them to resort to importing product to meet customer demand for higher quality (and more expensive) vegetables. Therefore there are two important aspects that must work synonymously. These are increased production coupled with higher quality produce. Increases in domestic produce along these lines will see a significant reduction if not total substitution with local production.

Implications for consumers if increased production is achieved

Overall the implications for consumers with increased production will be positive. Particularity for produce sourced from the Fugalei market and by default due to the similar structure, the Salelologa Market. Within a relatively short timeframe due to the structure and close proximity of the overall Samoan market, consumers should see general price reductions or price consistency at a lower average level. Considering the health implications of crops grown using environmentally friendly techniques as recommended under the Fruit and Vegetable Strategy for Samoa, the broader benefits will be quite positive. This will ensure consumers in general will have access to affordable vegetables more often.

10. Conclusion

In relation to the current statistic collection points and relevance to the overall vegetables markets

This survey indicates the following factors that are relevant to improving the value of market data to better inform policy and guide development of the fruit and vegetable sector:

1. Expansion of statistics collection to include similar outlets to those covered in the study

2. Utilizing similar pricing methodologies to those used by farmers to improve relevance of data to actual market pricing techniques
3. Noting the type of tomato surveyed for price to ensure variations in varieties are not affecting data.

In addition, considering the volumes that are moving through the alternative markets compared to the Fugalei market it is clear (refer to Table 2) that Fugalei market may only be capturing approximately half of the total volumes traded. Therefore Fugalei market data alone cannot be used as an indicator of market functionality as a whole, but may be useful as an indicator of market saturation point.

In relation to impacts to the value chain (farmers, traders and consumers)

Due to the collected data demonstrating relatively static pricing at outlets external to Fugalei, plus the presence of expensive imports and high variation in pricing for tomatoes in particular, it is concluded that increased production will have a net positive impact on the current farming community. The increased production should also see increased employment and more stable farmer incomes. There could also be a default development of more efficient logistics within the value chain due to stable supply allowing the market to mature to more efficient distribution arrangements such as contracted supplies. Increased efficiency will allow farmers, traders and consumers to divert energy to other areas of their businesses and the economy in general.

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