

# An Assessment of the Fresh Fruit and Vegetable Production and Marketing Systems in the Sultanate of Oman

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## تقييم إنتاج ونظام تسويق الفاكهة والخضروات الطازجة في سلطنة عمان

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خلاصة: لقد نما قطاع الخضروات والفاكهة في سلطنة عمان خلال العقدين الأخيرين بصورة ملحوظة نتيجة للعديد من التغييرات التكنولوجية التي ساهمت في توسيع المساحة المزروعة والإنتاجية. لقد تعدى هذا القطاع مرحلة الإستهلاك الذاتي وأصبح يتجه نحو صورة أكثر تجارية، ويعتبر السوق المحلي المصدر الهام لمنتجات الخضار والفاكهة في سلطنة عمان. تعنى هذه الورقة بتحليل هيكل ونتائج على هذا السوق لمعابنة نقاط الضعف والقوة في أنظمة الإنتاج والتسويق، وتدل النتائج على أن نمو هذا القطاع في المستقبل يواجه عوائق تسويق حقيقية. أوضحت دراسة الهيكل الحالي أن هناك غياباً للتحكيم السوقي والتنسيق العمودي. كما تشير إلى أن آلية التسعير منحازة لمصلحة التجار والموزعين، وتحسين أداء هذا السوق ممكن بتحسين خدماته الوظيفية.

ABSTRACT: The fruit and vegetable sector in the Sultanate of Oman has developed remarkably in the last two decades. It has undergone technological changes that have resulted in an upward trend in cultivated areas, yields and total production. Furthermore, it is widely recognized that the sector has moved from the subsistence status to a more market-oriented system. For all of the Sultanate's fruit and vegetable production, the domestic market is by far the most important outlet. The present paper explores market dimension and identifies opportunities and constraints of these production and marketing systems. Results indicate that development in this sector faces serious market constraints. Studying current structures reveals a lack of market arbitrage and vertical coordination. The pricing mechanisms are tilted to the advantage of merchants and market dealers. Marketing of fresh produce can be improved by the enhancement of facilitating functions.

The fresh fruit and vegetable sector in Oman has developed remarkably during the last two decades. The system produces food items essential to the domestic diet and some common export commodities. A major part of this development can be attributed to technological and structural changes. Many economic and technical factors have affected the speedy adoption of modern farming innovations in areas where vegetable and fruit cultivation had never been a major activity. These factors included the government's efforts to improve the productivity of small family farms, and higher returns to early vegetable and fruit growers.

Production, productivity, and cultivated area have increased since the late 1970's. Demand for these products, which has been growing in recent years, has come primarily from domestic consumers. Exports are growing at a very slow rate. Oman is not self-sufficient in fruits and vegetables, importing more than one-third of its basic vegetable and fruit demand (JICA, 1990). However, some regional fruit and vegetable surplus crosses the border to neighboring Gulf Cooperation Council (GCC) countries.

Studies (JICA, 1990) reveal that the development of fruit and vegetable production has often resulted in domestic market saturation and depressed prices. The existing marketing system has been described to have served poorly in guiding the production and distribution of fruit and vegetable crops in quantity, quality, form, space and time (JICA, 1990). Fruit and vegetable exports have been sporadic. They have not emerged from a careful evaluation of the production and marketing resources or a deliberate export plan.

In general it is perceived and recognized that fruit and vegetable sectors face serious market constraints. The challenge to develop an efficient fruit and vegetable marketing system is high and expected to be higher in view of domestic and international economic changes.

The overall objective of this study was to generate information on the fruit and vegetable production and marketing organization in Oman. The main production issues addressed relate to how production was organized in terms of number and size of producers, ownership, resource use, cultural practices and technology and, how the production-marketing decision was made by producers.



# FRUIT AND VEGETABLE PRODUCTION AND MARKETING

## TABLE 1

### *Area of production of agricultural produce<sup>1</sup>*

Year	Vegetables <sup>2</sup>		Field Crops <sup>3</sup>		Fruits <sup>4</sup>		Others <sup>5</sup>	
	Area (ha)	Production (1000 t)	Area (ha)	Production (1000 t)	Area (ha)	Production (1000 t)	Area (ha)	Production (1000 t)
1978	1,935	N.A.	4,400	N.A.	27,469	N.A.	1,437	N.A.
1982	3,481	54.8	5,572	175.6	27,715	125.6	4,256	29.1
1983	3,887	61.3	6,245	197.7	28,460	129.0	4,753	33.5
1984	4,302	67.9	6,966	221.4	29,390	132.9	4,993	37.6
1985	4,726	76.3	7,514	250.7	29,830	140.1	5,697	42.9
1986	5,130	83.4	8,237	283.3	30,487	144.7	6,021	47.6
1987	5,531	94.0	8,912	311.4	31,441	152.1	6,342	49.6
1988	6,040	105.4	9,647	339.8	32,303	161.3	6,657	56.4
1989	6,207	110.3	9,680	341.2	33,225	163.8	6,974	62.9
1990	6,438	115.7	9,910	349.0	34,290	169.3	7,176	67.2
1991	6,640	124.7	9,931	364.2	35,628	197.2	7,369	67.7
1992	7,010	132.5	10,192	376.2	35,990	205.4	7,577	70.2
1993	7,025	133.3	10,195	376.8	35,812	203.5	7,580	70.9
1994 <sup>6</sup>	5,727	111.4	22,619	721.6	42,978	233.2	-	-

<sup>1</sup>Sources : 1978 - 1988 data, JICA, 1990; 1989-1993 data, MOAF, 1993 data, CBO, 1994.

<sup>2</sup>Tomato, chili pepper, onion, garlic, okra, watermelon, sweet watermelon, cabbage, cucumber, potato.

<sup>3</sup>Wheat, alfalfa, tobacco.

<sup>4</sup>Date, lime, mango, banana, coconut.

<sup>5</sup>Papaya, carrot, sweet potato, radish, eggplant, squash, pumpkin, cauliflower, beetroot, turnip, bean, lettuce, pea, barley, sorghum, chickpea, lubia, lemon, sweet lime, fig, guava, pomegranate, almond.

<sup>6</sup>1994 data are reported as aggregated areas and production for all vegetables, field crops and fruits. Vegetables include all crops in (2) plus carrot, sweet potato, radish, eggplant, squash, pumpkin, cauliflower, beetroot, turnip, bean, lettuce and pea. Field crops include wheat, alfalfa, tobacco, barley, sorghum, chickpea, and lubia. Fruits include crops in (4) and lemon, sweet lime, fig, grape, guava, pomegranate and almond.

## TABLE 2

### *Land distribution according to farm size*

Farm Size	1979				1993			
	No. of Holdings	% of total Holdings	Area Cropped (ha)	% of Total Area	No. of Holdings	% of Total Holdings	Area Cropped (ha)	% of Total Area
<2 ha	55,814	85.7	28,300	34.0	48,412	77.6	31,390	29.7
2-5 ha	6,380	9.8	19,000	22.8	8,571	13.7	24,000	22.7
5-10 ha	1,848	2.8	12,800	15.2	4,059	6.5	21,960	20.8
10-50 ha	1,034	1.6	17,600	21.2	1,299	2.1	17,750	16.8
> 50 ha	66	0.1	5,700	6.8	48	0.1	10,530	10.0

Source : Compiled by authors from AOAD 1994 a&b.

land tenure is not available. Although survey data have indicated low evidence of rented farms to local or expat renters, unofficial information suggests the existence of a wide system of farm rental. Land renting falls under two general categories, namely share renting and cash rent. The most commonly used agreement is cash rent. It is simpler and does not involve any risk to landlords. It is difficult to assess the competitive situation within

this land renting "market" due to lack of accurate data as well as the informal nature of these arrangements. However, there is some evidence that the rental market provides a low level of competition favoring the renters.

Small "family farms" have bypassed the traditional subsistence state of farming. They have commercial objectives and use new farming technologies including



water saving irrigation systems, mechanization, hybrid seeds, commercial fertilizer, greenhouses, and pesticides. Small farmers are primarily interested in production and secondarily interested in marketing. The farm gate has been viewed as the dividing line between production and marketing.

Large scale agricultural production is developing in various regions of the Sultanate. These corporations view their farming occupation as an investment expected to generate significant profits. Most of these large scale farms show a high production success using the latest technologies.

All farms, small and large, depend on the local market outlets to sell their produce. None of them has developed self-channels or other means to dispose of their production.

In general, the outstanding characteristic of fruit and vegetable production is the dominance of small size family farms in spite of the recent development of large corporations. Competitive conditions prevail in the production system as there is a large number of production units. Entry and exit are easy and none of the growing units are capable of influencing the price by varying the demand or supply. Growers regard price as a constant parameter independent of their behavior. Entry by large corporate producers is constrained by capital requirements. While no recorded data is available on their operation, field observations show that large farms have no significant influence on local market conditions. They face the same market outlets as small farmers and rely mostly on the Public Authority for Marketing Agricultural Produce (PAMAP) and small wholesale or assembling markets, as well as neighboring export markets. All market authorities interviewed (auctioneers and commissioners as well as PAMAP collecting centers) indicated that big farmers had no power on market prices. They sell their produce under the same conditions as small farms.

Farmers' production and marketing decisions were studied through the survey data. The results suggest that farmers react to many factors including prices, expertise, government policies and farmer perceptions of demand. Producers make production decisions based primarily on price expectations, future production and market conditions. The expected price depends to a large extent on previous year's price.

Survey results indicate that farmers' production decisions have been in some cases biased toward some crops on the basis of habits, and expertise gained in their production. Yields in previous years have proven to have an effect on planting decisions in the following year. Another point that relates to farmers' behavior is their decision as to where to market their produce. Growers are faced with only a few market outlets such as the Public Authority for Marketing Agricultural Products (PAMAP), farm gate, road side, and local

wholesale markets. The decision on where to sell their produce is basically a day-to-day choice. However, most farmers have indicated they are attracted to the market outlet that can dispose of all their produce. The PAMAP is their favorite outlet. Yet PAMAP is going through a restructuring process with subsidy removal. It does not offer farmers the same marketing opportunities as in the past. Previously, PAMAP was a government-owned and financed agency. In future, it will no longer be sustained by public funds. Plans have been made since 1994 to change its purpose and objectives. PAMAP's role in the market has changed. It can no longer afford to make business losses to benefit farmers. Its current objective is more pecuniary than in the past when it was intended to solve distribution problems in the country.

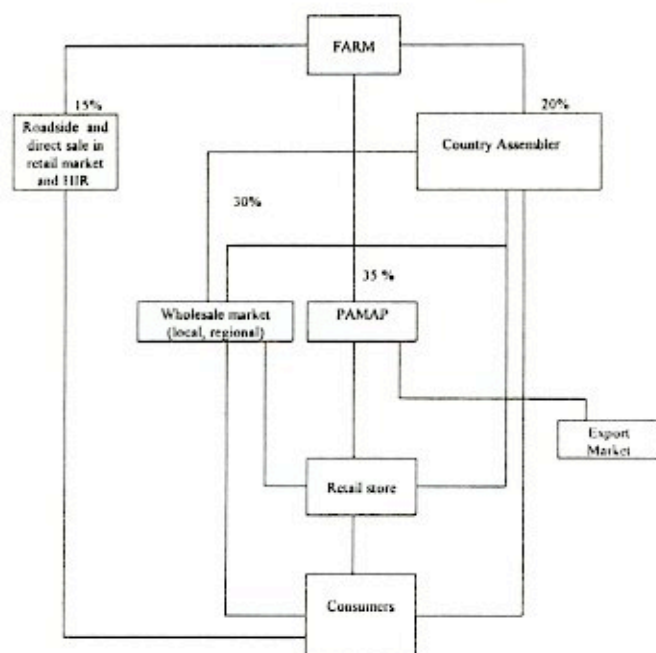
**THE MARKETING SYSTEM:** The overall description of the typical fruit and vegetable market situation in Oman shows that structure and pricing manipulations have been a mixture of trade at set terms and free market trade. In the first system, PAMAP is at the same time the price-maker and the buyer. The second system includes a wide range of marketing options namely local wholesale markets, on farm sales, roadside sales, and direct sales to consumers. The typical channels through which fruits and vegetables flow from the farm to the ultimate consumers are presented in Figure 1.

Survey results indicate that PAMAP has been the preferred outlet for most farmers. It attracted more than 30% of total fruit and vegetable production. It has regional collection centers in addition to its headquarters located in the capital area. PAMAP has built, since its creation in 1985, a great deal of marketing infrastructure such as cold storage, storage facilities and developed sound transportation means.

PAMAP trades on a steady price fixed daily by the headquarters office. These prices are not bargained by farmers. A general assessment of PAMAP-growers trade shows evidence of market power similar to monopsonistic buyers exercised by PAMAP through relatively high and reliable buying capacity. Not enough information is yet available on the overall PAMAP operation to make corresponding inferences on its position and role in the fresh fruit and vegetable marketing system. However, it may be hypothesized that PAMAP's past role was primarily in the disposal of farm produce. For more than 7 years PAMAP offered an unlimited market outlet to fruit and vegetable growers at satisfactory prices. While recognizing this role of PAMAP in the absence of second best substitutes and effective market outlets it may also be hypothesized that the emerging role of highly subsidized PAMAP in a weak and less than competitive marketing system has generated two serious flaws. The first flaw concerns the overall development of the



## FRUIT AND VEGETABLE PRODUCTION AND MARKETING



**Figure 1 .** Market channels for local fruits and vegetables and market share of different outlets. HIR, hotel, institution and restaurant. PAMAP, Public Authority for Marketing Agricultural Products. More than 70% of bananas were marketed by PAMAP

marketing system and the fear of private companies to develop marketing outlets in a system yet dominated by PAMAP. The second flaw is related to PAMAP's overall business operation. Sources (JICA 1990) indicate that PAMAP's operation may not be within acceptable efficiency standards. This lack of operational efficiency is recently passed on to farmers through low and discouraging farm prices in face of declining government subsidies.

Local wholesale markets are the second most important market outlet. They trade around 25 to 30% of total vegetable production depending on the region and the produce. These markets are administered by the municipality (one case of private wholesale market was encountered) and regulated by a public fee buyers to keep prices low.

On-farm selling is a small but very reliable outlet

in some regions. It is very well-developed in the Bureimi region where more than 50% of the vegetable schedule is set by the administrator. Duties and privileges of the market are usually auctioned to the highest bidder who will administer the market for a fee levied on the sellers. Farmers in these local wholesale markets sell their produce to small merchants and itinerant traders, but more often to local small independent retailers.

In many of these daily wholesale markets, conditions of imperfect competition have been observed as there are many small sellers selling an excessive supply to few buyers with limited demand. Survey data show that on a given day during the peak vegetable production period the number of farmers and the quantity they offer in selected wholesale markets outweighs by far the number of buyers and their buying capacity (Table 3). Sales take place very often by open auction conducted by market "auctioneers." The number of traders attending the auction at times when the market was not congested is small, and there was evidence of deliberate attempts by buyers to keep prices low. On-farm selling is well developed in the Bureimi region where more than 50% of vegetable production is sold on the farm. However, in other regions like Al-Batina and the interior this outlet does not attract more than 5 to 10% of total production. On farm sales are very attractive to farmers since it saves them time and meets their need to trade on a "cash on delivery basis." Buyers are usually small merchants with pick-up trucks. The one producer-one merchant open bargaining on the day of sale is the most common pricing method. There are a few cases of formula pricing arrangements based on the nearest wholesale market price on that day. Other outlets, such as roadside, direct selling, contractual arrangement with hotels, institutions and restaurants are not reliable outlets, although they account for around 10% of the traded produce.

Physical and facilitating functions serving the private marketing system have been very limited and in many cases absent. Transportation of fruits and

TABLE 3

*Market characteristics*

Market	No. of Sellers	Quantity of Vegetables Offered (tons)	No. of Buyers (wholesalers, retailers)	Average Buying Capacity/Buyer (kg)	Clearing Price (baiza/kg)			
					Cauliflower	Tomato	Cucumber	Pepper
Salalah	40	5	15	50-100	40	80	-	-
Nizwa	50	8	20	50-100	-	50-70	-	100
Ibra	30	2-3	7	30-50	80	70	50	-

Consumers are not included in this survey.



vegetables from the farm to the market outlet is often limited to a pick-up truck. Storage does not exist at any stage in these marketing channels except at PAMAP's regional and central centers, which are not available for private use. An official grading and standardization system does not exist. Grading is left to the discretion of farmers and buyers. The produce is delivered to the wholesale market or to PAMAP in rough packaging and sometimes in bulk. An organized market news service does not exist. Information about prices and demand is deficient for farmers and for market merchants.

Three trading categories can be drawn for this marketing system at the farm level. The first includes dispersed, direct trading which has not grown remarkably because of low private initiative to invest in marketing of fresh agricultural products. This represents a very low proportion of the total production and includes sales at the farm gate, roadside, from producer to consumer and direct selling to retailers, jobbers, hotel institutions and restaurants. The second category includes small local wholesale markets where buyers are mostly retailers and wholesalers. This trade outlet extends to what Rhodes calls the market clearing principle (Rhodes, 1971) but to the disadvantage of farmers. The auction system and individual open negotiations have not produced a high degree of competition in these markets. It is recognized where prospective buyers are few, auctions and open negotiations prove to be essentially non-competitive (Breimyer, 1978). The third trading category is administered pricing involving trade between farmers and PAMAP.

All three trading options put farmers at a disadvantage and do not offer much chance for a "workable competitive market". No evidence of significant competition has been observed between

different buyers of various market outlets.

Individual market outlets in these trading options involve a small number of non-specialized buyers. Jobbers and wholesalers are not committed to fruit and vegetable activities. They may be engaged in buying and selling any commodity as opportunities arise. These buyers are small, usually they are not heavily capitalized. Market entry and exit is very easy. They buy from production area markets to resell in other regions. It is generally recognized that the net effect of buyers market arbitrage is to reduce intermarket price differentials. This does not seem the case in some fruit and vegetable markets in Oman. Farmer price differentials are high from one region to another suggesting a lack of market arbitrage or an insufficient volume of arbitrage to affect inter-regional prices (Table 4).

For all fruits and vegetables, the marketing margin ranges from 40 to 60%. Survey data indicate that the market price share occurring to farmers ranges from 40 to 60% depending on the crop and market location. The previous study (JICA, 1990) shows the average share occurring to market participants is about 59% for all fruits and vegetables. These marketing margins are judged to be high, suggesting significant price inefficiency resulting mainly from weak market operation and arbitrage. The hypothesized lack of market integration may be evidenced by the low distribution of products from production regions to major markets. This state of distribution (Table 5) indicates that products from one region are not shipped to many major markets in other regions.

The field survey reveals that to dispose of a product, the local and regional markets, while limited

TABLE 4

*Prices (baizas/kg) received by farmers in selected markets<sup>1</sup>*

Location/Product	Cucumber	Zucchini	Cauliflower	Tomato	Lime	Banana
Ibra (Sharkiyya Region)	50	-	-	70	-	-
Salalah (Dofar)	400	120	100	250	600	100/120 <sup>2</sup>
Nizwa (Interior)	300	-	-	90	-	-
Sohar (Al-Batina)	-	-	150	60	400	-
Al-Bureimi (Dhahira)	300	-	-	60	-	-
Muscat <sup>3</sup> (Capital Area)	300	200	200	100	700	-

<sup>1</sup>Average prices for 1994-1995 season.

<sup>2</sup>Established price at PAMAP.

<sup>3</sup>Muscat prices were collected from retail markets and calculated after deducting market margins evaluated at around 37 to 60% of retail price.



## FRUIT AND VEGETABLE PRODUCTION AND MARKETING

TABLE 5

*Intermarket product distribution<sup>1</sup>*

Origin	Markets(%)						
	Ibra (Sharkiyya)	Dofar (Salalah)	Muscat	Nizwa (Interior)	Al-Bureimi/ Al Ain, UAE	Sohar (Al-Batinah)	Others
Sharkiyya (Ibra, Kamel and Wafi)	>70	-	<20	-	-	-	10
Dofar (Salalah)	-	>90	<5 except for banana	-	-	-	-
Interior (Nizwa, Bahla)	-	-	40	50	-	-	10
Al Batina (Sohar, Shinas)	-	<5	40	-	-	40	15
Dahira (Bureimi)	-	-	-	-	>50	-	<5

<sup>1</sup> All products included.

in capacity, remain the second choice outlet after PAMAP. As a result, prices are depressed in markets where quantities are in excess and vice versa. Farmers prices collected in selected markets during the month of January 1995 (Table 4) indicate high price differences ranging from 50 to 200 baizas/kg. This difference compared to an estimated average transfer cost of 50 to 100 baizas/kg may well justify better market arbitrage, i.e. shipments from low-price to higher-price markets. Market arbitragers do not seem to respond to these price differences, apparently because of lack of mobility and absence of market news on price differences. The intermarket price relationship was significantly less than what is predicted by the workable competition model.

Operational efficiency of marketing and production units is very low as the system generates a high rate of wasted products at the farm and other stages of the marketing channels. No official records on wasted fruits and vegetables are available. However, estimations on farms and various market outlets confirmed large amounts of unharvested vegetables as well as unsold quantities at wholesale and retail markets. This product wastage is estimated at 15 and 20% for fruits and vegetables, respectively.

In response to a lack of competitive pricing and market efficiency, surveyed farmers indicated that the effectiveness of this system may be improved by means of well-managed, equipped, and organized markets with PAMAP operating as a private buyer. Local assembly markets, as well as regional and central wholesale markets, have been important to Agriculture in many societies. They have a potential in Oman to give sellers and buyers open access to each other, improve market news and grading, and promote new agribusiness

institutions with attractive and specialized jobs to Omani youngsters. They are frequently referred to as public markets and their operation is quite public. Prices are publicly arrived at and steps are usually taken to disseminate the information quickly to all interested parties (Rhodes, 1993). Their implementation in Oman may be much better suited to the particular conditions of this sector than any other means of vertical coordination.

### Conclusions

The assessment of the fresh fruit and vegetable production and marketing system in Oman draws a picture of a sector that has enjoyed remarkable growth in production and productivity through technological and structural progress. The system however, has not developed adequate market outlets to support future production and demand growth. The overall picture that emerges from this analysis indicates that the production-marketing system of fruits and vegetables in Oman is seriously deficient. The system is recognized to have served poorly in guiding the supply and distribution of fruits and vegetables in quantity, quality, time and space. Production structure remains dominated by a large number of producers with no influence on market conditions. This structure is not pointing toward significant concentration in size and production. On the marketing side, the competitive structure includes direct trading, wholesale markets, and administered trading. All do not meet the conditions of a workable competitive market. They show evidence of lack of market arbitrage as well as lack of vertical coordination between farmers and buyers. Farmer price differentials and marketing



margins are high, suggesting price inefficiencies due to weak market organization and non-competitive structure on the buying side.

Growers are facing very limited outlets for their produce. The declining role of PAMAP and limited numbers of small private dealers with low business volumes have proved to be inadequate for a self-sustained fruit and vegetable sector. Results suggest that the overall efficiency and effectiveness of the production and marketing systems could be improved by developing well-managed and equipped local and central wholesale markets. These markets have the potential to improve competition and to promote private agribusiness initiatives. Workable competitive structure on the buying side may be achieved through improved market facilitating functions as well as promotion of private agribusiness companies to take over the former role of PAMAP.

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