



From Video "Urban Agriculture", RUAF 2001

Quality and Quantity a survey in a Philippine urban setting Demand for **Vegetables**

Two studies were conducted to characterise the demand of private households, vendors and institutional users for fresh vegetables in Cagayan de Oro City, the Philippines. Specifically, these surveys aimed to provide baseline data for decision-makers and farmer-practitioners to further improve the market transparency for vegetables and, thus, contribute to better producer and consumer linkages.

The first survey was conducted in February 1998 within different urban and peri-urban districts of Cagayan de Oro. The total number of respondents was 300, comprising 100 vegetable growers, 100 vendors and 100 consumers from private households, who were systematically sampled at random. The survey questionnaire contained questions pertaining to socio-economic status, vegetable consumption patterns and vegetable marketing systems.

The second survey using administered questionnaires was conducted in June 1999. A sample group of one hundred respondents was chosen randomly after clustering the various groups of institutional users

of fresh vegetables. The generated data of both surveys were subjected to descriptive statistical analysis.

RESULTS

Private households

Rice is consumed every day by 97 % of all respondents, followed by vegetables (73 %), fish (48 %) and meat (31 %). Consumption of vegetables is highest among farmers (85 %) and lowest among consumers from the higher-class subdivision (64 %). The latter, however, have by far the highest consumption of meat (78 %), which is lowest (7 %) among farmer respondents. The most frequently consumed vegetables were horseradish tree leaves (*Moringa oleifera*) with 86 %, eggplant (*Solanum melongena*) with 78 %, squash (*Cucurbita maxima*) with 69 %, string beans (*Vigna sesquipedalis*) with 68 % and tomato (*Lycopersicon esculentum*) with 67 %.

The major motivations for consuming vegetables are the high nutritional value (88%), followed by its being a flavour additive to the diet (34%) and in order to stay in good shape (32%). The most important factor considered in buying vegetables is freshness and being free of spots and damage (87%). This is followed by texture (7%) and price (5%). For only 1% of the respondents, it is important

that vegetables are not sprayed with hazardous agro-chemicals. When vegetables are bought, these are usually fresh as stated by 98% of the respondents. However, just 78% state that the vegetables bought are free from spots and damage indicating lack of proper production and post-harvest technologies. In terms of quality criteria for selected vegetables, medium sizes are preferred as compared to larger or smaller sizes. Additionally, consumers prefer to choose the produce freely rather than to have it pre-packed. Based on the responses, the estimated daily per capita consumption of vegetables in Cagayan de Oro is less than 100 grams, which is consistent with findings of similar surveys (Philippine Association of Nutrition 1997). This is far below the recommended daily intake of 200 grams of vegetables necessary to assure a sufficient vitamin and micronutrient supply for the human body (FAO/WHO 1992).

The average amount spent per week on vegetables in Cagayan de Oro is PhP 118 per household (US\$1 (40 PhP at time of interview). Based on the number of households in the city (94,672 as of 1997), the annual expenditures for vegetables by private households alone amounted to about 581 million PhP ((US\$14.5 million).

Retail and wholesale vendors

There are three major public retail markets as well as one wholesale market in Cagayan de Oro. The majority (87%) of retailers get their supply from the wholesale market, while a few (13%) buy the vegetables directly from the farmers. Farmers usually market their vegetables by selling them to wholesalers (59%), followed by intermediaries (21%), by retailers (15%), while 7% are selling them on a consignment basis. The prices are often dictated by the contractors (50%), more so than by the farmers themselves (37%). Sometimes (10%), a compromise is reached between the two parties.

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Acknowledgement

This research study was funded by the European Union Commission. The authors want to thank the staff of the Periurban Vegetable Project of Xavier University College Agriculture, particularly Janet Arnado, Carmelita Orbina and Lynn Janubas, for their contributions.

Eggplant (38%), tomatoes (35%), squash (30%), pak choi (*Brassica napus* var. *chinensis*; 25%) and head cabbage (*Brassica oleracea* var. *capitata*; 23%) are the most popular vegetables sold in the different public markets of Cagayan de Oro. Most (68%) of the vendors purchase their vegetable supply everyday, although some (20%) do it twice or three times a week. Frequency of purchase is related to vegetables' highly perishable state. To have fresh vegetables, vendors cannot store large quantities of vegetables due to the lack of appropriate refrigeration facilities. Most (82%) of the vendors believe that the consumers' first consideration when buying is freshness while a few (13%) think it is the texture, which confirms with the expectations of the consumers as regards vegetable quality. To prolong the freshness of vegetables, most (48%) of the respondents sprinkle them with water, which, however can result in secondary fungal or bacterial diseases. About twenty percent have to sell them immediately, having found no other means of prolonging the freshness.

Wholesalers get an average of 13,078 kg of vegetables from the farmers per purchase and have a daily sale of 2,403 kg. The retailers on the other hand, get 103 kilos per purchase and sell an average of 50 kg every day. Most (72%) of them purchase vegetables daily.

Institutional users of fresh vegetables

The five vegetables bought in the largest quantities on a weekly basis by institutional users are potato (*Solanum tuberosum*; 31.4 kg), squash (6.3 kg), cabbage (6.1 kg), carrots (*Daucus carota*; 4.4 kg), and papaya (*Carica papaya*; 3.8 kg). The average consumption of potatoes was pushed up by the requirements of one fast-food restaurant. This restaurant buys as much as 2,500 kg of potatoes per week. Other regular users of the vegetable require only 5.8 kg of potatoes per week. All of the hotels and restaurants buy bell pepper, cabbage, potatoes and cauliflower weekly. Along with

tomatoes and carrots, these are the more popular temperate vegetables bought. The least popular temperate vegetables are mushrooms, asparagus (*Asparagus officinalis*), broccoli (*Brassica oleracea* L. var. *italica*) and lettuce (*Lactuca sativa*).

All three public hospitals surveyed buy almost the same kinds of vegetables as the private ones except that they have a wider vegetable purchase range including mostly tropical and cheaper vegetables such as papaya, bottle gourd (*Lagenaria siceraria*), kangkong (*Ipomoea aquatica*), sweet potato leaves (*Ipomoea aquatica*) and Malabar spinach (*Basella alba*). Private hospitals on the other hand expand their choice of vegetables to include temperate ones such as broccoli, asparagus and cauliflower (*Brassica oleracea* var. *botrytis*) though the latter are not frequently bought. The more popular tropical vegetables are bitter melon (*Momordica charantia*), chayote (*Sechium edule*), eggplant and string beans. The least bought tropical vegetables are cowpea (*Vigna unguiculata*), okra (*Abelmoschus esculentus*), Malabar spinach and kangkong. On average, institutions allocate 9.5% of their marketing budget to vegetables, corresponding to a purchase of PHP 1,300 (US\$32.50) worth of vegetables per week.

On average, respondents find prices, which are $2\frac{1}{3}$ times higher than the cheap price to be too prohibitive. For the more expensive types of vegetables such as asparagus, broccoli and garlic (*Allium sativum*), prices higher by $1\frac{3}{4}$ times are deemed prohibitive. For the cheaper vegetables such as kangkong, Malabar spinach, sweet potato leaves and okra, prices are considered to be prohibitive when they are $3\frac{1}{4}$ times higher. There were several institutions, however, particularly restaurants, which would not stop them from buying particular vegetables (e.g. cauliflower) even when they are expensive.

Twenty-three percent of the institutions surveyed expressed openness to buying pre-peeled and pre-sliced vegetables.

These are mostly the shelter institutions, both government and private. However, the majority of the hospitals, hotels and restaurants were unwilling to buy pre-peeled and pre-sliced vegetables. Their reasons are sanitary considerations, minimised, keeping quality and loss of nutrients. Eleven percent of hotel-based respondents said that these vegetables get discoloured, and will not meet the various size and shape requirements of many dishes.

The most commonly preferred pre-peeled vegetables were potatoes, carrots, chayote and squash. Bitter melon, jackfruit (*Artocarpus heterophyllus*), sponge gourd (*Luffa cylindrica*) and potatoes were the preferred pre-sliced vegetables. Most of the institutions preferred medium-sized (most often carrots, broccoli, bell pepper (*Capsicum annuum*) and cabbage) to large vegetables (usually bitter melon, eggplants, bulb onions (*Allium cepa*) and squash).

DISCUSSION

Among the most striking findings of the study is the very low per capita consumption of vegetables in Cagayan de Oro, which is - as in the rest of the Philippines - less than half of the minimum daily requirement to satisfy an adequate nutrient and vitamin supply for the human body. This can be attributed to dietary habits and tastes of consumers. More efforts are needed from the government and non-governmental organisations to educate consumers on a better vegetable diet. Additionally, strong seasonal price fluctuations as compared to other staples prevent many housewives from integrating vegetables on a regular basis into their daily diet. The present marketing set-up in Cagayan de Oro suffers from lack of good storage and grading facilities, limited display areas and lack of low-interest credit sources. There are some efforts of the city government of Cagayan de Oro in cooperation with other agencies to establish a new wholesale market, which - if implemented - would substantially improve the situation for all concerned.

REFERENCES

- FAO/WHO. 1992. International Conference on Nutrition. Rome: Food and Agricultural Organisation of the United Nations.
- Philippine Association of Nutrition. 1997. Fourth National Nutrition Survey, Philippines (1993) - Part A: Food Consumption Survey. *Philippine Journal of Nutrition* XLIV (1 & 2).