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Food Safety in Hanoi's Vegetable Supply: Some Insights from a Consumer Survey [1]

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Abstract

Food safety of vegetables, a major component of diets, has become a widely publicized issue in Hanoi. Studies reveal a host of contaminants present at levels well above maximum residue limits, including pesticides, nitrate and heavy metals. In response to concerns, the government launched a safe vegetable program in 1995 including technical support to cooperatives on the supply end, and the establishment of "safe vegetable shops" to ensure distribution of this produce. This article presents the results of a qualitative survey of households and restaurants regarding the issue of vegetable safety. It confirms consumer interest in the program to provide safety guarantees, and suggests that many would be willing to pay a price premium. The constraint at the moment appears mainly on the supply rather than on the demand side. Safe vegetable shops, with only 1.5% of Hanoi's current vegetable supply, are able to sell easily all they can purchase, despite some price premiums. However, to move from this experimental stage to a larger-scale program, it would be useful to gain more detailed insights into the size of the potential market for safe vegetables, by way of a larger survey.

Background

The issue of food safety appears as a major concern in Hanoi, as evidenced by some troubling articles in the local press and a number of public declarations. In an article entitled "Food poisoning and hygiene standards targeted this month", a Vietnam News journalist quoted reports stating that the number of people poisoned by contaminated fruits and vegetables had increased by 34% in 1998 (Vietnam News, July 5, 1999). Another article published in Vietnam Economic News indicates that: "Five hundred workers of a paper joint venture enterprise in Binh Duong Province succumbed to food poisoning because of eating toxic vegetables" (QUOC BAO, 1999).

Vegetables are a major component of Vietnamese diets. Vegetable consumption in Hanoi was estimated to amount to 70 kg/capita/year in a 1994 consumption survey by the National

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Institute of Nutrition, which showed a major increase as compared with 1988 where the estimate amounted to 55 kg/capita/year (LE et al., 2000). Leafy vegetables, e.g. water spinach and water lilies, are used daily in soups ("pho"), or cooked on their own or with fish or meat; carrots, cucumber, bamboo shoots are also commonly used in various dishes. Sources of supply include numerous retail markets, e.g. Cho Buoi, shops, and itinerant traders. A major characteristic of Vietnam's food supply is the importance of out-door catering which represents 20% of the total food expenditure (LE et al., 2000).

The bulk of vegetables supplying Hanoi is produced in peri-urban areas, where the sources of water and soil pollution are numerous, including domestic and industrial wastes. Given the limited size of their plots, usually less than 500 m², vegetable growers use large quantities of fertilizer and pesticide in the expectation of high yields. The results of samples analyzed from vegetable production areas by RIFAV (THI, 1999b) showed that pesticide residues were many times higher than recommended levels: for instance "Wotabox" in cabbage is 1.0 mg/kg (instead of 0.2 mg/kg), and "Monitor" in cabbage is 2.0 mg/kg (instead of 0.1 mg/kg). The nitrate contents of vegetables is also in excess of standards. For instance, in relation to a maximum tolerance level of 500 mg/kg, the contents ranged from 620 to 1080 mg/kg in cabbage samples in 5 cooperatives. As regards heavy metals, analyses of samples of choysum, lettuce, kangkong (water spinach) and kohlrabi in three districts of Hanoi show cadmium contents ranging from 0.045 to 0.115 mg/kg, in relation to an allowed threshold of 0.02 mg/kg (THI, 2000).

In response to public concern for vegetable safety, the Vietnamese Ministry of Agriculture launched a "safe vegetables" program in 1995. This program involves technical support to eight cooperatives to spread the production of "safe vegetables" with regulations relative to the use of water and inputs[2], the distribution of the vegetables through specific "safe vegetables shops", and some controls on pesticide residues. In 2000, there were 30 "safe vegetable" shops in Hanoi. They are linked by annual contracts to cooperatives for vegetable supply and the Service of Science, Technology and Environment for quality control. The total supply of safe vegetables is around 2 000 tons, which corresponds to approximately 1.5% of the total Hanoi vegetable market (Hanoi Agricultural and Rural Department, 1999). In addition to getting their supply from "safe production" areas, the shops make efforts to ensure post-harvest quality: sorting, cleaning of the produce, packaging under plastic, airing and sometimes cooling, regular cleaning of the shop. It is difficult to get reliable data on prices to see how they compare with other points of sale, as each shop has a different price strategy. According to our survey in 5 shops and 5 markets, there were some large price premiums for some shops and some vegetables, but none for others (BRIDIER, 2000). In some cases, prices in the safe shops were actually cheaper: for instance, we found price differentials ranging from 15 to 30% for cucumber, -50% to + 50% for water spinach; 0 to 90% for long beans. It can be concluded from this that the safe vegetables shops are still running on a kind of experimental basis.

Key Issues

A major unknown factor to assess the relevance of such a program relates to consumer preferences and behavior. Are the Hanoi households, and in particular, the poor ones, as sensitive to the safety issues as the media and the government seem to be? Are they more sensitive to safety for certain types of vegetables? How do they presently cope with this problem? Are they ready to pay the cost of better guarantees on vegetable safety? Do they trust the government's efforts in this area? What would be an optimal supply of quality and quality signs? Answering these questions requires an understanding of consumers'

[2] Easy technical procedures were approved by decision of the Scientific Committee and Minister of Agriculture and Rural Development on 15 July, 1996 (THI, 1999a).

viewpoints on the demand for vegetable safety. This set the objective of a study by CIRAD and RIFAV conducted from May to September 2000.

Method

The issue of consumer behavior relating to food safety requires essentially qualitative, tactful questioning. Hence the method chosen was in-depth interviewing of a small number of households, with concern to represent a diversity of household profiles. A total of thirty-six households were interviewed, located in three districts of Hanoi, with a sample including traders, laborers, civil servants, etc. The questions related to the following:

- what they defined as good vegetables
- what they defined as safe vegetables
- their sources of supply
- their knowledge and appreciation of vegetables sold in ”safe vegetable” shops
- their various strategies to decrease food health risks
- their wishes in terms of safety signals
- the price difference they were ready to accept for guaranteed safety

Eleven restaurants, with all the types of clientele, ranging from working class to upper class, were the subject of similar interviews. In addition, five safe vegetable shops were interviewed on their strategies to ensure vegetable safety, their constraints and their views on market prospects.

Given the small sample size, the usual possible discrepancies between declarations and behavior as regards food purchases and the fact that households were contacted through heads of districts and are not used to giving free and spontaneous answers, the results of this survey should be approached with caution and be considered as preliminary hypotheses, to be confirmed by a larger survey, rather than as definitive results. Nonetheless, several factors suggest the validity of the surveyed consumers' declarations. First, the consumers were very interested in the survey and answered with ease and sometimes passion. Second, there is some diversity in the answers, which would not have been the case if the consumers had given what they believed were the “politically correct” answers. At the same time, some convergence in the declarations indicates some shared preferences.

Main Results

A major result is the confirmation of the high concern of Hanoi households relative to vegetable safety, irrespective of age and purchasing power. For 15 households out of 36, a good vegetable is synonymous with a clean and safe vegetable (in Vietnamese, the two terms “sach” and “antoan” are often used equally). 21 households out of 36 define clean vegetables as vegetables with little or no chemicals; 11 explicitly refer to pesticides, 8 to fertilizers, 3 to use of clean water. The concern for safety varies according to the nature of vegetables and is higher for leafy vegetables and vegetables eaten raw. When asked about the criteria of choice for vegetable purchases, the number of persons answering “safety” came to 33 for cabbage, 31 for water spinach, 30 for beans, 29 for cucumber and spinach; while it fell below 20 for eggplant, bamboo shoots, potato, and gourds.

Hanoi households have various strategies for enhancing the assurance of vegetable safety:

- The choice of vegetables with signs of worms, not smelling of chemicals, without too neat an appearance. This is the case for 5 interviewed consumers. But some other consumers, on the contrary, prefer to buy vegetables without signs of worms,

because they value vegetable “clean” appearance a lot. Hence there may be a contradiction between the search for safety signs and the search for signs of visual cleanliness.
- The development of trust relationships with regular suppliers; in this respect, itinerant traders may be avoided.
- Not consuming the vegetables considered as the more risky ones, including long beans and lettuce. This is the case for 5 interviewed consumers.
- Certain practices regarding vegetable preparation including soaking in water supplemented with salt, or vinegar, or a bactericide, from half an hour to three hours (this is the case for 31 out of 36 consumers and 10 out of 11 restaurants).
- For some households, the purchase of vegetables in safe vegetable shops. This strategy is detailed below.

13 out 36 households and 6 out of 11 restaurants have already purchased vegetables in “safe vegetables shops”, mainly on an occasional basis (11 households, 5 restaurants). Yet all except one household have heard about them and think the vegetables they sell are better for their health.

Consumers declare that the limited number of such shops and their distance relative to their homes is the reason for their limited purchases, rather than the price differential between ordinary and safe vegetables. Shop managers indicate that most of their customers live or work in neighboring areas, and are middle and high income. They also have low income customers, but their purchases are usually limited to small quantities for their little children.

Only 11 out of 36 consumers declare that prices influence their purchasing decisions (vegetables are considered as cheap in Vietnam; this point should be confirmed by an analysis of prices relative to food budgets and other Asian situations). 23 out of 36 consumers reckon that “safe vegetables” are expensive, but only 3 out of 36 declare that this prevents them from purchasing them. All consumers declare they are ready to pay a higher price for safe vegetables. 16 out of 36 indicate the price differential they would be ready to pay for any type of vegetable (10 to 50% for 4 consumers, 50 to 100% for 4 consumers, and 100 to 200% for 8 consumers). The rest give price differentials for some vegetables, the most frequently quoted ones being water spinach, cabbage and tomato. For instance, 8 consumers are ready to pay 10 to 50% more for safe water spinach, 7, 50 to 100%, and 4, 100 to 200%; for cabbage, the numbers are 6, 7 and 1, respectively, and for tomato, 3, 5 and 5.

The consumers’ readiness to pay a premium for safety is confirmed by the shop managers’ declaring they experience no problem in selling the vegetables. The main brake to the development of their sales relates to supply, not demand.

The price differential for safe vegetables seems to be more of a problem for restaurants than for households: only 11 households out of 35 quote price as influencing their purchases, while the ratio is 10 out of 11 for restaurants. While all restaurants are ready to pay higher prices for safe vegetables, the acceptable price differential is below 50% for 8 of them. The price of safe vegetables is a factor limiting their purchases for 5 of the 11 restaurants surveyed.

The interviewed consumers trust the controls set by the government. The consumers would like to be better informed on the guarantees provided by the safe vegetable program, in particular in terms of controls. Most of the information available to consumers originates from the television (for 31/36) and newspapers (for 18/36) and is considered as insufficient for 23 consumers out of 36, mostly as regards the nature of controls on safety risks. More than half the interviewed consumers consider there is no way to be sure vegetables sold as “safe” really are safer, the main reason being the absence of marking indicating origin of

production, and certification. Meanwhile, safe shop managers declare that the frequency of controls is far from optimal. 32 consumers declare they would like information to be disseminated through the media, 30 through schools, 28 through traders.

Recommendations

As noted, the survey results should be confirmed by a larger survey with a statistically representative sample. It would in particular be useful to conduct additional analysis of the variation of behavior from one consumer to the other, notably regarding differences in the readiness to pay a price premium, and frequency of purchases of safe vegetables.

It is nevertheless possible to highlight some implications of this work in terms of risk management in local vegetable supply chains:

- The policy of "safe vegetables" production and distribution spots corresponds to consumer demand and should be developed.
- The widespread distribution of safe vegetable shops should be a major objective in this policy.
- The price strategy should be based on the following: careful recording of price data in a sample of points of sale and analysis of the sources of variation; differentiation of the price mark-ups according to the type of vegetables and, as far as possible, economic profile of consumers which varies according to location of the shop.
- There should be increase in consumers' information relative to safe vegetables: production and marketing procedures, vegetable control procedures, location of safe vegetable shops. Some of this information could be included in the packaging and labeling of the produce.

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