Quality Dynamics of Fruits and Vegetables in the Post-Harvest Phase

Abstracts of Seminar Contributions

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Post harvest/cold chain services for fresh fruits and vegetables in Albania

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The vegetable and fruit sector in Albania is experiencing a continuous expansion. However, there is no accompanying progress in the improvement of post harvest and cold chain services. No official estimates are available on losses due to improper post harvest handling, but these are believed to be high.

To appreciate the current situation and the potential of companies to adopt post harvest/cold chain systems, a survey was conducted in six representative districts (Tirane, Lushnje, Fier, Korce, Shkoder, Elbasan), where the production of fruits and vegetables is high. The following crops were targeted by this study: potato, onion, tomato, apple, grape, melon, carrot, cauliflower and cabbage, chosen on the basis of the total production and the potential for further production expansion and export. Interviews by questionnaires and direct investigation of the companies were performed.

From this survey twelve companies were identified which can offer post-harvest and/or cold chain services. The summed-up capacity of these companies to store fruits and vegetables was estimated to be 74,706 m³. However, most of this capacity is used for meet and dairy products rather than fruits and vegetables.

Private ownership dominates the sector (11 out of 12 companies identified). Six out of twelve companies possessed freezing facilities (capacity = 45,000 m³).

None of the companies provide complete facilities to prepare the produce for freezing (cleaning, washing, maceration, blanching, grading and/or packaging). Hence, a full post-harvest service was missing in all companies surveyed. The missing services included: cleaning, sorting, grading, pre-cooling and packaging.

One major problem which was identified is the lack of collection points, with only one exception. Other problems related to the post-harvest services and the quality of produce at the post-harvest stage were identified. These include harvesting (improper maturity harvest, contamination of produce, harvesting during the hot hours of the day), curing (lack of curing/drying facilities for roots, tubers and onions), packing operations (lack of proper sorting, cleaning and washing, rough handling; lack of or inappropriate packaging material), storage (poor sanitation, lack of storing facilities on-farm and at the wholesale points, placing warm produce into the cold room, mixing produce) and transport (lack of cooling during transport, rough handling, use of bulk transport).

From this survey, it is concluded that the post harvest/cold chain service is rather rudimentary with only two companies having adopted almost complete system. Further investments and training are needed to fully establish a post harvest/cold chain system by potential companies identified in this study.

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Nutrient content and sensory evaluation of lai (Durio kutejensis Hassk. Becc.) fruit flesh of some lai cultivars originated from Indonesia

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Lai fruit belongs to durian family, however it is found not wide spread as durian. The fruit is originated from East Kalimantan Province in Indonesia. Its taste and flavor is different compare to durian. It is more flavorless than durian, so it has potential horticulture to be exported. However, the fruit is not well recognized outside East Kalimantan yet, and until now there is still poor information about its nutrition content. Recently, we have explored nutrient content and sensory evaluation of seven cultivars of Lai fruit originated from Batuah Subdistrict of Kutai Kartanegara Regency of East Kalimantan Province, e.g. Lai Hijau, Lai Durian, Lai Teliling, Lai Semangka, Lai Besar, Lai Kuning, and Lai Nangka. In general, nutrient content of the Lai cultivars were 69.23-71.46%, 1.12-1.62%, 0.96-1.54%, 2.02-2.45%, 8.80-10.27%, 6.05-6.83% for water content, ash, fat, protein, vitamin C, sugar, and carbohydrate, respectively. While sensory evaluation of the Lai cultivars were 3.40-4.30 and 3.27-4.07 for taste and flavor according to hedonic test, respectively, and 3.00-3.90, 2.47-3.57, 3.23-4.17, and 2.07-3.40 for color, texture, taste, and flavor according to hedonic quality test, respectively. The data were compiled from 3 replications for nutrient content, and 30 replications for sensory evaluation. Lai Kuning has the highest fat, sugar, and fiber content. Lai Nangka has the highest ash and Vitamin C content. Lai Hijau and Lai Kuning have the highest sugar content. Lai Semangka has the highest protein content. Lai Besar has the highest carbohydrate content and most favorite taste and flavor. In general, it was found that Lai Kuning and Lai Besar have the best nutrition content and become the most favorable.
INTRODUCTION

There are at least six varieties of durian found in East Kalimantan, Durian (D. zibethinus), Lai (D. ovifrons), Keratongan (D. oreopalous), Lahong (D. dulcis), Labalal (D. graveolens), Durian Monyet (D. grandiflorus), and Durian Kuro-kuro (D. tetraspis). Among the six varieties of durian, only the first two durians stated above have recognized economic value, however Lai fruit is not well known yet outside East Kalimantan compare to Durian (D. zibethinus) (Bernardinus, 2002; M Nipah, 2002). The answer of this fact is because Lai is a specific fruit which is found only in East Kalimantan and there is still limited technology to transfer the fruits outside East Kalimantan.

There are many cultivars of Lai, which are different in fruit morphological and flesh type. The color of Lai flesh varies from red, dark yellow until white, its texture and taste are dry and sweet, as well as it is more odorless than D. zibethinus, so that it is very potential become export commodity to many parts of the world. Until this time, there is very limited information about this exotic fruit from East Kalimantan. To promote Lai fruit, we described the nutrient content and sensory evaluation of this fruit.

MATERIAL AND METHODS

Lai fruits were harvested as they were commercially ripe and were kept for three days to get the ripen fruits. Seven cultivars of Lai fruit from Batauh Subdistrict of Kutai Kartanegara Regency were observed, each with three and thirty replications for nutrient content assay and sensory test, respectively. The chemical reagents from Merck and Riedel Haen were used in this experiment. Eight parameters were observed for nutrient content e.g. water content (pores), ash (muffle furnace), fat (lohstein), protein (semi-micro Kjeldahl), vitamin C (iodometry), sugar content (hand refractometer), carbohydrate (by different), and fiber (gravimetry). All of the methods used were according to Sudarmadji et al., 1997.

SENSORY EVALUATION

Based on sensory approach the seven Lai cultivars could be grouped into 4 types: Lai Kuning and Lai Besar has the highest level of fiber content, while Lai Hijau has the lowest level of fiber. Data on Table1 shows that carbohydrate content of the seven Lai cultivars has the opposite value compare to water content. It means that total content of ash, fat and protein of each cultivars were not differ.

REFERENCES