Fruit and vegetable processing in central Africa

The impact of urban growth on its development

More than two-thirds of the population of the world will live in cities by 2025. The population of sub-Saharan Africa will have increased 10-fold and that of the cities will have increased 100-fold. Clarifying the impact of this growth on the fruit and vegetable processing sector in central Africa leads to wondering about the impact of urbanisation on the demand for processed products and on the conditions for the emergence of processing enterprises and about how to improve the management of supplies of raw materials to these enterprises.

The impact of urbanisation on the demand for processed products

Consumption surveys conducted in Africa (DSCN, 2000) show that urbanisation is accompanied by an increase in the consumption of fresh and processed fruit and vegetables, mainly as fruit juice, canned products and jams. What are the reasons for this?

Firstly, the populations of cities are of different geographical and socio-cultural origins. They find themselves in a situation of discovering new food practices. A mingling of eating habits follows, leading to increasing demand for diversification in food in terms of products, dishes and services.

Secondly, the urban way of life is characterised by longer travelling times between home and work. As a result, the midday meal is increasingly eaten away from home. The urban way of life is also accompanied by an increase in the standard of living and the diversification of women's professional occupations. There are three main results:

- catering develops in streets, small restaurants or at workplaces;
- consumption becomes individualised. Indeed, meals are eaten less and less in a family context and consumers are therefore under more pressure from new products;
- a decrease in time for shopping encourages the development of modern distribution channels;
- the distance between producers and consumers increases and the latter tend to wonder about product quality.

These effects imply new constraints for food products; these must be:

- quick to prepare and easy to keep;
- packaged in small units in the light of the reduction in the size of families;
- be reassuring with regard to food hygiene during manufacture and reassuring for consumers.

Processed fruit and vegetable products match these new requirements overall.

The impact of urbanisation on the conditions of emergence of processing enterprises

Urbanisation also creates a favourable context for technical innovation in processing and hence the development of enterprises as a result of the following features:

- the knowledge produced in family and clan structures complements knowledge from research centres, universities and technical institutes;
- geographical proximity in urban areas favours collaboration between processing enterprises and suppliers of equipment and

services. This collaboration allows processes of adaptation to the specific requirements of enterprises. These are referred to as aggregation effects from the theoretical point of view;

- a process of competition and mimicry becomes established among enterprises and accelerates the dissemination of a technical process or a new product when this is profitable. This also leads to the continuous search for innovation by enterprises so that they can become differentiated and create rent situations.

Finally, there are other factors such as proximity to solvent demand, easier links with international markets enabling the importing of equipment, the proximity of donors and of various services, access to running water and electricity and also the social origin of entrepreneurs who, because of their status, prefer to live in town.

The present reality of the fruit and vegetable processing sector is very disappointing in central Africa in spite of this favourable context with regard to demand and enterprises. A country like Cameroon imports large quantities of processed fruit and vegetable products each year and the situation is much the same in the other central African countries. There are several reasons for the difficulties of processing enterprises in meeting demand: lack of encouragement by the institutional and legal environment, lack of training, political instability and the cash management connection between management of the business and management of the family budget. Among the problems, we chose to examine difficulties in obtaining supplies of raw materials.

How can management of the supply of raw materials be improved?

Multiple forms of supply

A multiple-choice questionnaire filled in by 23 enterprises in Cameroon (after available work - AGRO-PME 2000) revealed that over 65.3 percent of businesses had a single form of supply, 26.1 percent had two forms and 8.6 percent had three.

As a result of this, **52 percent** of processing enterprises obtained raw materials supplies on fresh produce consumer markets. This causes several problems: competition with buyers supplying the fresh produce channels, considerable price instability and strong heterogeneity of quality. The enterprises no longer master the geographical origin and the crop management sequences of the produce that they purchase.

Some **40 percent** of enterprises obtain supplies directly from the production zones, either at production markets or directly from growers. The two main risks observed are first that of being unable to find sufficient goods to fill the lorries (resulting in high transport costs) and then the risk of breaks in lines of communication, especially during the rainy season.

39 percent of enterprises obtain goods from suppliers either on a contract basis—but this generally does not work because of difficulties in ensuring respect of these contracts—or by organisation and co-ordination with producer groups or co-operatives.

21 percent of enterprises have integrated supplies, that is to say they grow their own produce.

In terms of frequency and for all types of processing (juice, canning, jam), the fruits for which there is most demand by enterprises are pineapple (84 percent of enterprises), guava (68 percent) and mango (40 percent). Demand is medium for passion fruit, ginger, red sorrel and lemon. Soursop, papaya and orange are marginal products. Tomato is not included in the analysis as it is little requested. Furthermore, it is processed by an industrial enterprise (SCAN) that processes large tonnages.

The quantity of supplies to processing units

We calculated per capita availability of fruit and vegetables on the basis of a fruit and vegetable production quantity assessment project in Cameroon involving more than 40 DSCN (*Direction de la Statistique et de la Comptabilité Nationale*) survey staff for a year. Per capita consumption in Cameroon is 19 kg fresh fruits and 17 kg vegetables per year, whereas FAO recommends a minimum of 70 kg fruits for a balanced diet. In comparison, the per capita consumption figures in Europe are 102 kg fruits and 140 kg vegetables per year. This reveals a structural deficit in fruit and vegetable production in Africa and the need to increase this production in the coming years to ensure food security.

This underlines the need for processing industries to take supply problems into account. The idea of overabundant production of fruit just waiting to be processed is not as accurate as one thinks. In contrast, the main wealth and potential still little exploited is the extraordinary diversity of fruits and vegetables opening up important prospects for innovation in terms of new aromas. Some businessmen nevertheless report that quantities of unharvested fruits do exist, but the following comments can be made:

- a number of fruits rot under the trees and are not collected simply because they are attacked by pests and are of

poor quality. Recovering all this poor quality produce is not the aim of processing enterprises;

- the unsold production sometimes observed in rural areas consists mainly of mangoes and occasionally lemons. It is sometimes the result of the interruption of lines of communication. However, nothing indicates that this production would be available for processing enterprises if communications were reliable;

- finally, this leads to the problem of the strong seasonal nature of production.

The seasonal nature of fruit and vegetable production

The drawing up of production calendars for the various zones can be proposed in order to study this seasonal aspect. This requires specific methods. Indeed, the results may differ according to the method chosen. The example of a production calendar in Central Cameroon province (Temple, 2000) leads to the following observations:

- correlation of the seasonal nature of different fruits. When the calendar is presented as a graph of scores, it is seen that 40 percent of annual fruit production is concentrated in a three-month period (July to September);

- it is seen that certain fruits play an important out-of-season role. This is the case of guava and pineapple. As a result, their prices remain high in spite of the abundance during the season.

In fact, the seasonal nature of the different fruits is staggered between production zones. The best-known example in Cameroon is that of safou (Isseri F., 1999). It is therefore important for processors to be acquainted with this staggering and to identify production zones.

The regularity of purchase prices

The accounts of the juice production unit show that the price of the raw material varies at between 6 and 40 percent of the final production cost depending on the fruits. It is therefore important to address the seasonal nature of the price as there is not always a correlation between the seasonal nature of supplies and that of prices.

In appearance, there are few fruit and vegetable price information systems. In fact these data are often gathered by statistical services to calculate inflation indexes. The problem for entrepreneurs is that of gaining access to the data and then turning them into useful information for strategic decision making. We have developed a spreadsheet simulator for the rapid calculation of seasonal indexes with the aim of contributing to this process. Applied to the price of pineapple, the simulator reveals a slight seasonal variation of prices in Yaoundé (approximately 12 percent). However, the seasonal variation of tomato prices reaches 50 percent. This means that an enterprise must manage its supplies. Indeed, a 50 percent variation in the price of a product forming 40 percent of the cost price has a very strong effect on the cash position and financial profitability of the enterprise.

The strategies used may combine several possibilities:

- diversification of the zones from which raw materials are obtained;

- diversification of processing activities by enterprises;

- development of storage.

Conclusion

It is observed that urbanisation creates a favourable context for increased consumption of fresh and processed fruit and vegetables and the emerging of enterprises. In spite of this context, the development of the processing sector is embryonic in Africa because of the massive imports of processed products.

Among the reasons, the supplying of enterprises with raw materials (during certain periods, at affordable prices and with sufficiently high quality) is an important constraint. This is aggravated by competition from the consumption of fresh fruit and vegetables, given the present inadequate production levels.

Thus, the sale in the streets or at workplaces of sliced fresh fruits in Yaoundé and Douala is resulting in a very strong increase in the consumption of guava, pineapple and papaya. A consumer survey on sliced fruits also shows that they are eaten on the one hand because they are thirst-quenching and because natural fruit juices are too expensive and on the other because local distribution is enhanced by small street vendors.

This increase in fruit consumption related to the diversification of forms of packaging has an impact on the markets supplying raw materials to processing enterprises. This example shows that food processing is not the only sector with innovation and attention should be paid to innovations in packaging and storage ■

Ludovic Temple, CARBAP
l.temple@camnet.com
Sandrine Dury, Cirad-amis
N. Monkam, AGRO-PME