# Current Status of Fruits and Vegetables Production and Consumption in Francophone African Countries - Potential Impact on Health

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**Abstract**

**This paper is a synthetic view of the situation of the production of fruits and vegetables and their availability for local consumption in francophone countries of Africa, in relation with some chronic diseases, such as diabetes and obesity. It is based on data from the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) and information collected through a survey made in each of the twenty francophone countries of Africa and Indian Ocean. The survey was in preparation of the workshop on "Promotion of fruits and vegetable for health in francophone African countries", held in Yaounde, Cameroon, on 23-26th of October, in the framework of the FAO-WHO initiative. There is a great diversity of situations related to the geographic position, the cultural traditions behaviour and economic situation. Very few countries are reaching the recommended intake of 400g of fruits and vegetables per capita and per day. These are humid-forest countries including Cameroon, Gabon, Guinea, Rwanda, and Burundi, where banana and plantains are the fruits most consumed. On the other side, the situation in Sahelian countries like Burkina-Faso, Chad, Mali, and Mauritania is even worse with an availability below one third of the critical level. A first analysis of data from FAO and WHO is supporting the assumption of a relation between a low consumption of fruits and vegetable and a high prevalence of chronic diseases like diabetes and obesity in some conditions.**

## INTRODUCTION

The WHO/FAO report, "Diet, Nutrition and the Prevention of Chronic Diseases" recommends a population dietary intake goal of more than 400 g per day for fruits and vegetables. Many advanced counties have already launched campaigns for promoting the consumption of fruits and vegetables, especially in the framework of the International Fruits and Vegetables Alliance (IFAVA).

It is a key issue of the WHO-FAO initiative on Fruits and Vegetables for Health launched in 1994, with the establishment of a framework for promoting fruits and vegetables at the national level in developing countries. As a follow-up, it was decided to organize workshops gathering participants from the same language community who have a high-level of responsibility in their country, as they will be charged for adapting and implementing the proposed framework in their respective countries. In September 2005 and August 2006, two workshops were organized, the first one for the eight Portuguese-speaking countries in Lisbon, and the second one for eight East Asian countries in Seoul. Each workshop hosted country representatives of the horticultural and health sectors. In October 2007 a workshop was organized for 16 African francophone countries in Yaoundé, Cameroon, with representatives from the horticulture, health, and education sectors from each country included.

## DISCUSSION

### Availability of Fruits and Vegetables in the World

A rapid analysis of the data from FAO in 2002 concerning the availability of fruits and vegetables (F&V) in the world, gives a good idea of the current trends. North

America, Europe, and Asia are over the critical level of 150 kg per capita per year (400 g/day), South-America just reaching this level, and Africa is staying far below with an average of around 100 kg per capita per year (Table 1, Fig. 1)

**Availability of Fruits and Vegetables in Sub-Saharian Africa**

When we examine the availability of fruit and vegetables on a per country basis, we see a great variability (Table 2, Fig. 2). Sahelian countries are far below 150 kg per capita per year and humid forest tropical areas are very high, due to a high consumption of banana and plantains.

**Fruits and Vegetable and Prevalence of Type 2 Diabetes in Francophone Sub-Saharian Africa**

When we review the data from WHO on prevalence of type 2 diabetes in comparison to the availability of F&V, it appears the highest rates of diabetes are in sahelian countries, where availability of F&V is low. Lower incidences are in humid forest tropical countries where availability is over 150 kg per capita per year, and where banana and plantain are a staple food (Table 3 and Fig. 3).

**Fruits and Vegetable and Prevalence of Obesity in Francophone Sub-Saharian Africa**

Data from WHO on the prevalence of obesity is available only for women and in few countries. It is the reason why we have considered all sub-saharan Africa. When we look at these data compared to the availability of F&V (Table 4, Fig. 4), the situation is quite different. A very low consumption of F&V is generally synonymous with under-nutrition and consequently under-weight. When the availability of F&V per capita per year is over 100 kg (with an exception in South Africa where it is 75 kg), but under the level of 150 kg, the prevalence of obesity is high. A decrease in obesity when consumption is over 150 kg, indicating a possible protective effect of F&V.

**An On-Line Survey**

The first results of an on-line survey conducted in August and October 2007, just prior to the Yaoundé's workshop, with its participants, identified the following major constraints to the consumption of F&V:

- Lack of national reliable data on F&V production, availability, and consumption, except those of FAO,
- Seasonality with shortages in dry areas,
- Lack of availability due to difficult access in relation with the geographical situation and road infrastructures,
- Food habits and cultural behaviour are often very deeply entrenched, such as "Fruits are for children' or "Don't eat papaya",
- Post-harvest losses varying from 20% to more than 60% in some situations, mostly due to bad packaging and transportation conditions,
- Poorly developed processing, most commonly in rural areas

Current national actions are still very weak and most national plans for food security are mostly focusing on staple food (calories) and addressing nutrient deficiencies; particularly with children and pregnant women (supplementation with Vitamin A, Fe, food fortification, and salt iodisation). There are very few plans for food diversification as those in Madagascar, Benin, Burundi, and Niger. There is also no plan for the promotion of fruits and vegetables for health yet in these countries. The message that we try to convey is: "A sustainable fruit and vegetable production for preventive nutrition".

**CONCLUSION**

Fruit and vegetable consumption is a win-win approach as it gives added-value to the horticultural products and income to the producers. It is an efficient way to address

poverty alleviation, take care of the health and well-being of the consumers, and offers new market opportunities for farmers, consumers, and agro-industry.

In addition to the FAO-WHO initiative, such an approach is supported by the Global Horticultural Initiative (GlobalHort) and is now considered globally as a good way for reaching the United Nations Millenium Development Goals (MDGs).

**Literature Cited**

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## Tables

Table 1. Availability of fruits and vegetables per continent (kg/capita/year).

| Country | Vegetables | Fruits | Total |
|---|---|---|---|
| Africa | 51,7 | 53,5 | 105,2 |
| Latin-America | 47,2 | 100,7 | 147,9 |
| Asia | 136,1 | 47,3 | 183,4 |
| Europe | 111,4 | 84,6 | 196 |
| North/Central America | 105,2 | 110,5 | 215,7 |

Table 2. Availability of Fruits and Vegetables in sub-saharian Africa.

| Regions | | Country | Availability (kg/capita/year) Vegetables | Fruits | Total |
|---|---|---|---|---|---|
| | 1 | Benin | 54,5 | 32,9 | 87,4 |
| | 2 | Burundi | 34,1 | 106,2 | 140,3 |
| | 3 | Cameroon | 78,8 | 79,6 | 158,4 |
| | 4 | CAR | 21,7 | 49 | 70,7 |
| Francophone | 5 | DRC | 8,3 | 30,1 | 38,4 |
| humid forest | 6 | Congo | 18,4 | 56,8 | 75,2 |
| tropical | 7 | Cote d'Ivoire | 36,5 | 75,6 | 112,1 |
| countries | 8 | Gabon | 38,5 | 161,1 | 199,6 |
| | 9 | Guineae | 57,6 | 100,6 | 158,2 |
| | 10 | Rwanda | 29,2 | 163,4 | 192,6 |
| | 11 | Togo | 29 | 9,4 | 38,4 |
| | 13 | Burkina Faso | 18,3 | 5,9 | 24,2 |
| | 14 | Capo-Verde | 47,1 | 46,1 | 93,2 |
| Francophone | 15 | Chad | 10,3 | 12 | 22,3 |
| Sahelian | 16 | Gambia | 33 | 5,8 | 38,8 |
| countries | 17 | Mali | 24,5 | 2,7 | 27,2 |
| | 18 | Mauritania | 11,9 | 11,5 | 23,4 |
| | 19 | Niger | 50,1 | 4,3 | 54,4 |
| | 20 | Senegal | 42,1 | 13,5 | 55,6 |
| Indian | 22 | Comores | 6,6 | 82,3 | 88,9 |
| Ocean | 23 | Madagascar | 18,1 | 44,5 | 62,6 |
| | 24 | Mauritius | 76,1 | 36,8 | 112,9 |
| | 25 | Seychelles | 60,1 | 73,4 | 133,5 |
| | 27 | Botswana | 29,2 | 35,2 | 64,4 |
| | 28 | Kenya | 33,8 | 51,3 | 85,1 |
| | 29 | Malawi | 19,5 | 39,4 | 58,9 |
| | 30 | Angola | 22,8 | 31,1 | 53,9 |
| Anglophone | 31 | Ghana | 31,6 | 117,7 | 149,3 |
| and | 32 | Mozambique | 6,2 | 16,7 | 22,9 |
| lusophones | 33 | Nigeria | 61,3 | 67,9 | 129,2 |
| countries | 34 | South Africa | 42 | 33,1 | 75,1 |
| | 35 | Sudan | 30,2 | 28 | 58,2 |
| | 36 | Tanzana | 27,9 | 29,6 | 57,5 |
| | 37 | Uganda | 19,9 | 206,4 | 226,3 |
| | 38 | Zambia | 22,6 | 11,1 | 33,7 |
| | 39 | Zimbabwe | 10,2 | 10,6 | 20,8 |

Table 3. Prevalence of type 2 diabetes compared with availability of F&V.

| Country | Availability F&V (kg/capita/year) | Diabetes prevalence / 1000 |
|---|---|---|
| Benin | 87,4 | 10,3 |
| Burkina Faso | 24,2 | 9,4 |
| Burundi | 140,3 | 3,5 |
| Cameroon | 158,4 | 4,3 |
| Central African Republic | 70,7 | 4,5 |
| Chad | 22,3 | 10 |
| Comoros | 88,9 | 8 |
| Congo | 75,2 | 4,8 |
| Côte d'Ivoire | 112,1 | 14,5 |
| Democratic Republic of the Congo | 38,4 | 5,1 |
| Gabon | 199,6 | 5,7 |
| Gambia | 38,8 | 14,7 |
| Guinea | 158,2 | 3,6 |
| Madagascar | 62,6 | 5,4 |
| Mali | 27,2 | 10,8 |
| Mauritania | 23,4 | 11,3 |
| Niger | 54,4 | 7,8 |
| Rwanda | 192,6 | 3,3 |
| Senegal | 55,6 | 12,3 |
| Togo | 38,4 | 10,5 |

Table 4. F&V and obesity in Sub-Saharian-Africa.

| Country | Availibility F&V (kg/capita/year) | Prevalence of obesity / 1000 |
|---|---|---|
| Benin | 87,4 | 61 |
| Burkina Faso | 24,2 | 24 |
| Cameroon | 158,4 | 82 |
| Congo | 75,2 | 75 |
| Eritrea | 8,8 | 83 |
| Ethiopia | 21,4 | 7 |
| Ghana | 149,3 | 81 |
| Kenya | 85,1 | 63 |
| Madagascar | 62,6 | 27 |
| Malawi | 58,9 | 24 |
| Mali | 27,2 | 37 |
| Mauritius | 112,9 | 198 |
| Mozambique | 22,9 | 39 |
| Niger | 54,4 | 16 |
| Rwanda | 192,6 | 35 |
| South Africa | 75,1 | 301 |
| Zambia | 33,7 | 30 |
| Zimbabwe | 20,8 | 72 |

## Figures

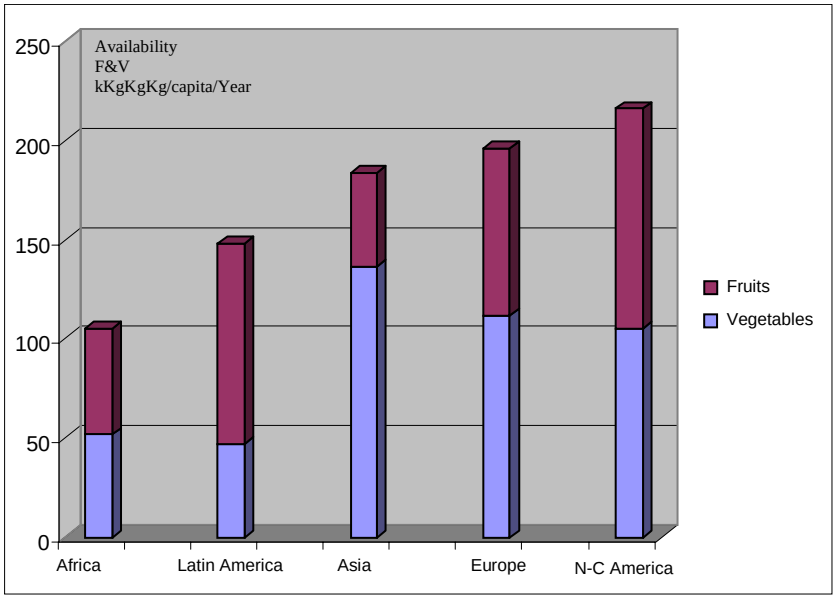


Fig. 1. Availability of fruits and vegetables per continent (kg/capita/year).

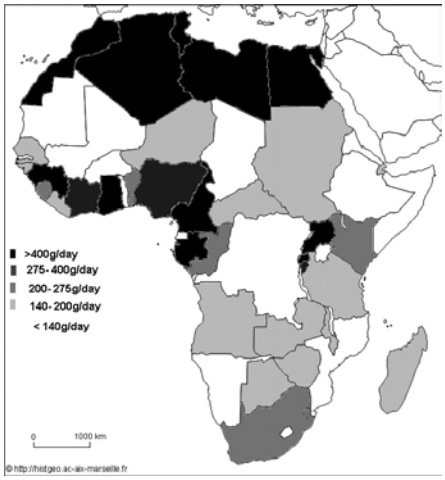


Fig. 2. Availability of F&V per capita in Sub-saharian Africa (in g per day).

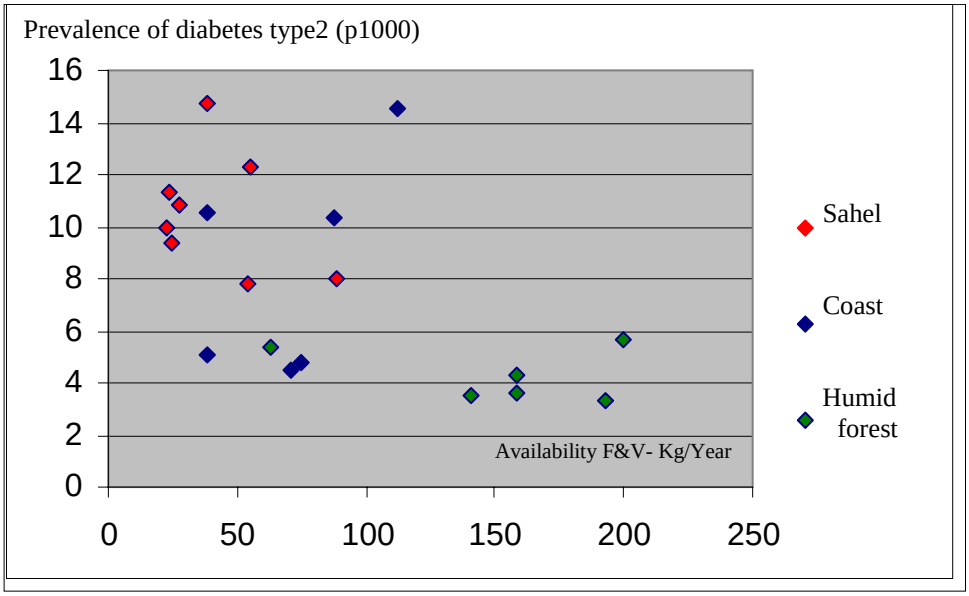


Fig. 3. Prevalence of type 2 diabetes compared with availability of F&V.

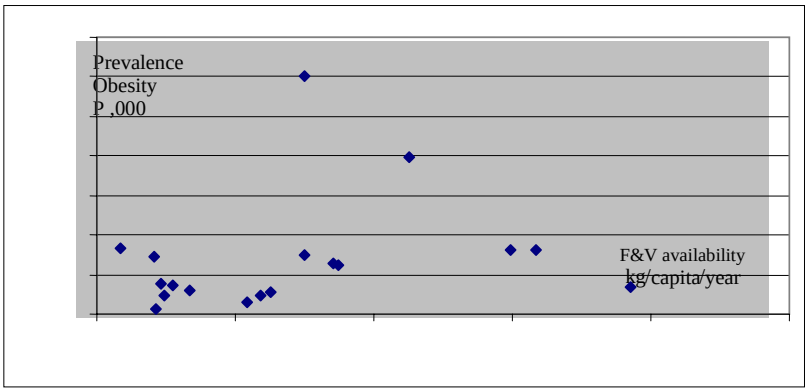


Fig. 4. Prevalence of obesity compared with availability of F&V.