

SUMMARY OF THE FSN FORUM DISCUSSION No 33
**IMPACT OF CASSAVA DEVELOPMENT ON FOOD SECURITY
AND NUTRITION OF THE RURAL POOR**
FROM 15 APRIL TO 15 MAY 2009

Proceedings available at
http://km.fao.org/fileadmin/user_upload/fsn/docs/PROCEEDINGS_ImpactOfCassavaDevelopmentOnFSNofRuralPoor.doc

I. ISSUES RAISED

Forum members were invited to share insights and experiences regarding development projects and programmes that focus on a single staple crop such as cassava.

Special attention was given to the impact on income and food security of the rural poor, the nutritional implications of a shift from a maize-based diet to an increasing consumption of cassava as well as the impact of large scale cassava production on the environment.

II. IMPACT OF CASSAVA DEVELOPMENT

A. Impact on income and food security

- Cassava is a vegetatively propagated crop and dissemination of new high yielding varieties is slow and consequent impact on processing and marketing will also be slow. Impact of a development project can typically be felt after 10-15 years. In South East Asia, the world's leading commercial producer of cassava, impact of new varieties were calculated to be over US\$1billion added to local farming economy but after 10 years of initial dissemination (M. Fregene).
- Cassava, being adaptable to most soils and climates is, through its many derivatives, the staple food of nearly 80% of the African population in general. The development of the cultivation of cassava in large quantities has allowed for the improvement of the quality of local products derived from cassava and for the development of new derivatives (cassava flour for making bread, starch for agro-industries and card board factories). This market share held by farmers has contributed to the increase of their income. Cassava flour is at the origin of new foodstuffs in the villages (cassava bread, donuts, cakes and pancakes) (L. Djilemo).
- Agro industrial plants import very large amounts of starch, essentially from processed cassava. These derivatives of cassava can be produced locally and could be a source of income for local people (L. Djilemo).

B. Nutritional value of cassava and implications

- **Nutrition value of cassava:**
 - Cassava is a main staple food in Africa and a good source of energy. However cassava is lacking protein and provides mainly carbohydrates. Cassava needs to be supplemented with other food sources especially vegetables, legume and cereal grains (J. Friedrich, M. Fregene, J. MacLean, P. C. Wasti). The nutritional quality of a cassava based diet compared to a grain based diet is of great concern, as cassava diet is much lower in protein and amino acids (J. MacLean).
 - Cassava leaves contains carbohydrates as well as proteins and Vitamin A and are suitable even for children's diets. While the leaves of cassava are nutrient dense there are issues of bioavailability and acceptability (J. Friedrich, J. MacLean).

- New GM nutrient-dense cassava varieties being developed under a Gates Foundation project (BC+ varieties) are very rich in protein and vitamins compared to currently grown cassava varieties (M. Fregene).
- **Nutritional implications of the development of cassava:**
 - Shifting from a maize/beans based diet to a cassava diet can be problematic, as it can increase protein deficiency (J. Friedrich, J. MacLean). There is a common misconception, that grains and roots are simply 'starches' and are interchangeable in the diet, which leads to switching without keeping the different properties in mind (J. MacLean). This is of particular consequence for children who are in need of nutrient dense and not only nutrient-rich diets (J. Friedrich, J. MacLean).
 - Cassava has some toxic compounds which can be reduced by means of certain preparation methods. The safety aspect therefore should also be highlighted in general and with cassava in particular (P. Chandra Wasti).

C. Impact on environment

The biggest impact of cassava on the environment is on the soil via water erosion when grown as a sole crop; the canopy of cassava closes only after 3 months during which the soil is exposed and eroded soils often end up in the rivers. However, cassava is seldom grown as a sole crop, so this is generally not a major problem with increased production under current farming systems. If markets for cassava increase and it becomes a sole crop, this could be a problem. In South East Asia and Latin America, this problem has been controlled by various agronomic practices, including the use of live hedgerows, terrace ploughing and zero-tillage (M. Fregene).

III. LESSONS LEARNT FROM CASSAVA DEVELOPMENT PROJECTS

- **Nutrition issues:**
 - Agricultural changes, such as reliance on cassava as sole crop, need to be accompanied by adequate nutrition information/education for negative consequences to be avoided (J. McLean).
 - Where cassava replaces grain and beans, it's important to provide the lacking protein and essential amino acids. Promotion of breast feeding until at least 2 years of age is particularly important. Where small amounts of animal protein (e.g. eggs) are available it is key that these high quality protein sources be given to growing children, pregnant and lactating women whose protein needs per kg body weight are higher. If cassava is grown as an income generating crop, theoretically families could purchase more nutrient dense foods with the added income (J. MacLean).
- **Market issues**
 - One of the biggest problems of cassava development is the huge swings in prices of fresh roots over the period of a year with the attendant non- or limited accessibility to processed food from cassava by certain segments of the population, particularly the urban poor. This is due to processing and marketing reasons, but also the seasonality of cassava harvest, long growth cycle of the crop, and relatively low productivity of farmers (M. Fregene).
 - The success of any cassava development project will have to be evaluated by price stability and all year round accessibility to the poor of cassava products. An organized processing and marketing supply chain will clearly go a long way to lessen the wide swings in prices (M. Fregene).

- **Targeting the poor:**

- One successful way of reaching the poorest is to work with (or create) first-, second-, and third- order community-based organizations; the second and third orders are often more visible and can reach the remotest first order organization; involvement of local governments is important (M. Fregene).
- The method based on the principle of participatory needs assessment should be key to targeting intended project beneficiaries (L. Djilemo).
- Development projects in general and cassava development projects in particular should have positive impact on the poor's income. In this regard, development projects should address the following issues (C. Mba):
 - Envision clear cut roles and entry points for interventions relating to improved planting materials -- moving the outputs of R&D to viable seed systems?
 - Are the requisite agricultural inputs available (fertilizer, irrigation, etc.)?
 - Beyond public R&D organizations, are other key players clearly identified and their commitments secured?
 - Is there the enabling environment for farming as a business (the political will backed by infrastructure, human resource, etc.)?
 - Is there a market for the produce?
 - Are there some safety nets for the farmers and their investments?
- While evaluating root and tuber development projects, the following points should be examined (M. Carbon):
 - Did the project provide adequate information to mothers about the nutrition value of root and tuber (R&T) products as compared to grains, and about the need to complement their children's diet (or their own when breastfeeding) with protein, fats and vitamin rich food stuffs?
 - To what extent is additional income generated by R&T products used to improve the households' diet?
 - Were R&T processors and consumers adequately sensitized on food safety issues (hygiene, toxins etc.)?
 - Did the project promote safety nets for R&T producers and processors to cope in the years of low prices?
 - To what extent did the project manage to organize R&T value chains in order to reduce price swings to the producer and processor, and promote access for all population groups to high quality processing products?
 - Is the seed production system supported by the project viable without project subsidies?

IV. REFERENCES

The Benin Roots and Tubers Development Programme (PDRT) (M. Carbon)

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Nutritional implications of projects giving high priority to the production of staples of low nutritive quality: The Case for Cassava in the Humid Tropics of West Africa (J. McLean)
<http://www.unu.edu/unupress/food/8F024e/8F024E01.htm>

Djilemo oven: a cassava drying method (L. Djilemo)
<http://fao08.fidafrique.net/Fiche39a-DjilemoOven-Cameroon.pdf>