Cassava Production and Consumption - A Global to Nigerian Overview

1. Introduction

The cassava plant (Manihot esculenta Crantz), is known by many names. In English-speaking Africa, the Caribbean and some other areas it is commonly known as cassava; in the Americans manioc; in Asia and the Pacific, tapioca. In French-speaking countries it is normally called manioc, in Brazil, mandioca or occasionally aipi, while in Spanish Latin-America, it is called yuca.

Cassava is grown in a wide range of environments -- from 30°N to 30°S of the equator; from sea level to 2,000 m elevation; 18° to 35°C temperature ranges; 50 to 5,000 mm rainfall; and in rich and poor soils of pH 5 to 9. Thus the "cassava belt" coincides roughly with FAO Economic Class II or the developing countries.

In terms of production, cassava is now the eighth-most important food crop in the world after wheat, rice, potatoes, maize, barley, millets and sorghum, and sugar. The crop is mainly grown as an intercrop by subsistence farmers, of course in some countries (Thailand, Brazil, Indonesia) it is grown as a sole crop; over 90% of the world's cassava production is used for human food. Reasons advanced for the predominance of this crop in subsistence agriculture include:

1. ease of propagation -- no seeds or roots must be stored for planting material;
2. relatively high yield in terms of calorific output per calorie of labor input;
3. relatively inexpensive to produce;
4. crop is not season bound and may be harvested throughout the year;
5. can grow on soils too "poor" for other crops;
6. a reliable, staple food crop;

7. emminently suitable for mixed cropping;

8. Special expertise not required.

From a nutritional viewpoint, fresh peeled cassava roots normally contain 60 to 70% water, the dry matter is mainly carbohydrate, only very small percentages of fat and protein are present (Table 1).

Table 1. Promiscate composition of peeled cassava roots and cereal grains

	Average composition of dry matter (%)				
	N free extract	Crude protein	Oil	Crude Fibre	Mineral matter
Cassava roots	89	3	5	5	2
Barley	79	11	2	5	3
Maize	79	11	5	3	2
Wheat	80	14	2	2	2
Sorghum	80	12	3	3	2

2. World Production of Cassava

The production of cassava is concentrated mainly in Africa (east of the Bandama River in Ivory Coast), South America and South-East Asia. Brazil is by far the largest national producer followed by Indonesia, Zaire, Nigeria, Tanzania and India (Table 2). Figure 1 shows the relative importance of cassava and other food crops on a global basis -- note that the cassava/yam belt also corresponds with most of the high population areas in the world.

Table 2. World area and production of cassava in 1972*

	Area ('000 ha)	Production ('000 tonners)	Av. Yield (tons/ha)
Africa	5,996	46,220	7.7
Zaire	810	10,500	13.0
Nigeria	960	9,570	10.0
Tanzania	800	6,000	7.5
South America	2,549	36,168	14.2
Brazil	2,100	31,000	14.8
Paraguary	125	1,850	14.8
Colombia	160	1,600	10.0
Asia	2,331	22,188	9.5
Indonesia	1,350	10,099	7.5
India	355	5,939	16.7
Thailand	225	3,867	17.2
Central America/Caribbean	110	713	6.5
Oceana	11	128	11.6
Total world production	10,998	105,417	9.6

*Source, FAO Production Yearbook, 1972. (Statistics on cassava production are very unreliable -- figures should only be regarded as rough estimates).

World production of cassava is thought to have increased by about 35% over the past ten years; an annual increase of about 3.5% a year. The increased production is mainly a result of new acreage; higher yields per hectare account for less than 10% of this increase in output. On an annual basis, this is an increase of about 44 kg/ha per year.

3. The Market for Cassava

Some of the more important factors which will influence the future demand

Potatoes dominant

Cassava and potatoes equal

Cassava dominant, more than 60%

Yams dominant, more than 60%

Cassava and yams equal.

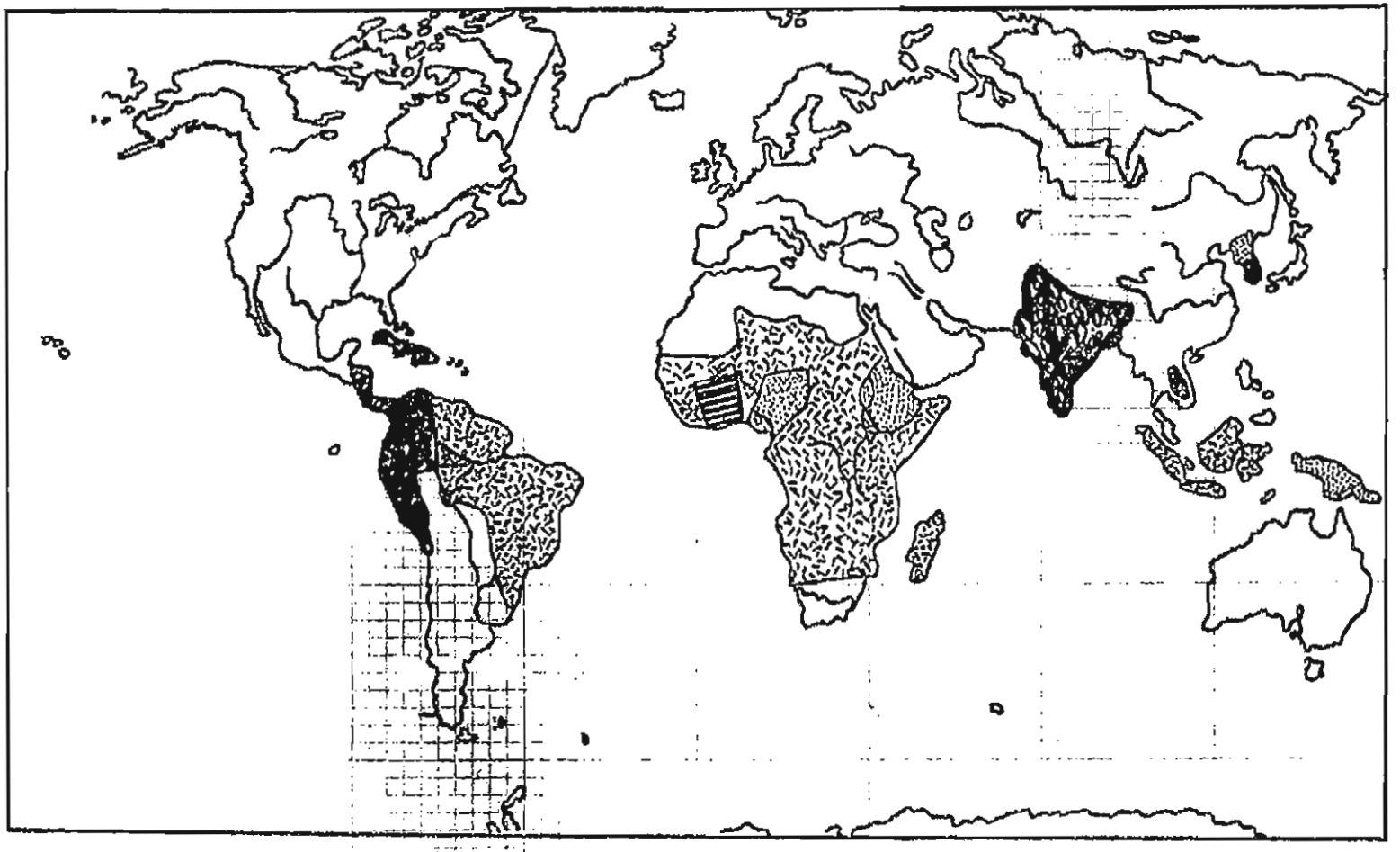

Fig. 1 Map of the world showing areas of importance for specific root crops.

for cassava/cassava based products include:

1. changes in population;
2. changes in the price of cassava relative to substitute and complementary foodstuffs;
3. changes in per capita incomes;
4. changes in tastes and preference;
5. industrial uses of cassava (starch, animal feeds etc.).

3.1 Changes in population. In the developing countries population growth rates seem to be growing at between 2.5 and 3.3% a year, thus other things being equal, the demand for cassava for human consumption would increase likewise.

3.2 Relative prices. As the price of one commodity shifts relative to another it is usual that there will be an increase in the use of the relatively cheaper commodity. A study of relative prices (in Western Nigeria) suggests that the price of cassava products have remained reasonably stable with respect to cereals. Thus little substitutive effect between cassava and cereals would be anticipated if past relative prices are used as indications of the future.

3.3 Changes in per capita incomes. As incomes rise, it is normal for the purchaser to increase (decrease) his consumption of various items. For example, as incomes rise, a large proportion of this increase -- for the low income group -- may be spent on buying more bread, minerals, etc. The income elasticities of demand (which measure the % increase in demand for a commodity resulting from a one % increase in income) for cassava is low, probably between -.1 and +.1.

One would not anticipate large changes in the demand for cassava due to income effects.

Taking the above factors into account, Professor Olayide and others have estimated that the demand for cassava for human consumption in Nigeria will increase by some 35% over the next ten years (taking 1975 as the base year). This is roughly equal to the increase in population or slightly above.

3.4 Industrial uses of cassava. The major industrial uses of cassava are as livestock feed (mainly in Europe); starches (for use in paper manufacture, confectionary, textiles); and for producing alcohol. The largest single use has been for livestock feed, in 1972 nearly 2.0 million tons of cassava chips and pellets were imported into Europe from Thailand.[1] With the price of cassava pellets in Europe at around $90 a ton, requires, after allowing for shipping, transport and processing costs, that the price of roots in Nigeria would have to be below ₦10 to ₦12 a ton to be competitive with the crop exported from Thailand. As the price of roots for human consumption is somewhat higher than this in Nigeria (₦15 to ₦20 a ton) it is unlikely that industrial demands for cassava for industrial uses can compete with demands for human consumption in Nigeria.

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[1]It is possible that the demand for cassava pellets in Europe will fall in future as the price of protein concentrates rises relative to feed grains. In the EEC, during the first decade of the Common Agricultural Policy the price of feed grains was kept artificially high. In such a situation the additional cost of making up the protein deficit in livestock rations from using cassava as opposed to cereals was less than the economic advantage of the lower cost of cassava than of cereals as an energy source. However, as the relative prices of protein concentrates and cereals in the EEC are now more in line with world prices it is less economic to use cassava in formulated livestock feed.

4. The Supply of Cassava

The future supply of cassava will depend on its profitability relative to other forms of agricultural production. In consequence, the supply of cassava will be influenced by:

1. the relative prices of cassava and competitive crops;
2. the relative yields of these crops;
3. the relative labor requirements of the crops;
4. government attitudes towards increasing the production of cassava; and
5. new technology.

The prices of cassava, yam and maize in Nigeria (after allowing for seasonal price fluctuations) tend to move together -- apparently gari and maize are sufficiently close substitutes as staple foods that the price of one never deviates very far from the other. Thus it appears unlikely that the price of cassava will rise relative to other products, so price incentives are unlikely to cause a "pull" to increase the supply of cassava at the expense of other food crops.

The relative return per unit of land and labor are influenced by relative yields as well as relative prices. Thus, if the application of new technology to food crop production increases the yield of one crop relative to another, it will become profitable to shift resources to the crop with the now relatively high yield. It is left to the reader to speculate on which crops are likely to have their yields increased most, relative to others, due to the NAFPP.

The supply of cassava in Nigeria has increased by about 2.5% a year over

the past ten years, i.e. roughly in line with the projected increase in demand for cassava for human consumption. This increase in supply as previously mentioned, has come about largely by increasing area as opposed to increasing yield per hectare. With population density and so the presence of land becoming more accute, in future, the output of cassava per hectare and per manday of labor must be increased above current levels.

In consequence, while in the past cassava production has increased roughly in line with population growth rates, the capability to do so in the future, unless output per unit of land can be increased, is less certain.

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