

Cassava's Potential as a Cash Crop

1. Introduction

Zambia's cassava breeders have released two waves of highly productive new cassava varieties, in 1993 and in 2000. On-farm measurements suggest that Zambian farmers using these recommended varieties produce cassava yields of between 18 and 20 tons per hectare in fresh weight. Because cassava roots contain over two-thirds water, this translates into dry weight, maize-equivalent yields of 5 to 6 tons per hectare. This high productivity, despite the use of no purchased inputs, makes cassava Zambia's lowest cost source of carbohydrates and therefore a potentially a highly profitable cash crop.

Cassava's well-known drought tolerance has likewise contributed to steady production gains over time. This contrasts sharply with the high moisture sensitivity of maize and consequently volatile maize production and prices (Figure 1). Cassava's food security features have attracted interest for some time, as a drought-mitigation crop. But its potential as a commercial crop has received far less attention. This article summarizes the existing status and potential for commercialization of cassava-based products in Zambia.

2. Existing structure of cassava production and trade

Farm households consume about 92% of national cassava production and sell the remaining 8%. Over the past decade, subsistence production has probably grown most rapidly of all the supply channels in Zambia's cassava value chain (Figure 2, Channel 1). From the early 1980's to the second half of the 2000's, per capita cassava production has increased from about 55 kg per person to about 85, equivalent to a 10 kg gain in dry weight. In the future, however, growth prospects in this subsistence channel remain limited. Once households assure their food security, they will only increase cassava production if a commercial market exists.

Sales of fresh cassava account for about 3% of national production (Figure 2, Channel 2). Because cassava roots deteriorate within 48 hours after harvesting, most fresh sales travel no more than about 50 kilometers from field to final market. For this reason, fresh sales are well established in northern Zambia. They are also growing steadily in the maize belt, where virtually all marketed cassava is sold in fresh form. The emergence of three regular fresh cassava depots in Lusaka's Soweto market indicate that this market has indeed established a foothold in the urban Lusaka market.

Trade in dried cassava roots accounts for the remaining 5% of total production. Most of the dried cassava traded in Zambia emanates from the northern cassava belt, where roadside depots assemble 50 kg bags of dried roots, and a network of traders purchase and transport them to urban markets and to deficit rural zones such as the fishing villages in the

swamps of northern Zambia. Small volumes of dried cassava travel long distances to supply markets in Lusaka, DRC and even Angola (Figure 3).

3. Commercial potential

Cassava-based processed foods (Channel 3) hold significant long-term potential for market growth in blended flour products, such as biscuits, breads, fritters and nshima. Given current wheat consumption and estimating potential substitution at 10%, the rate officially mandated in Nigeria, would yield a market for blended flours requiring about 40,000 tons of fresh cassava per year. Blended maize flour, at a 10% substitution rate, could potentially absorb as much as 200,000 additional tons of fresh cassava. In the medium run, if Zambia were to reach cassava consumption patterns similar to those achieved in West Africa, then gari and other cassava-based convenience foods could ultimately account for as much as 50% of total cassava consumption, or roughly 500,000 tons of fresh cassava per year.

Livestock feeds using cassava-based rations offer another potentially large market (Channel 4). Indeed, in world markets, Thailand exports large quantities of dried cassava to the European Union for use in livestock feeds. Feeding trials conducted by Zambia's Livestock Development Trust (LDT) confirm the effectiveness of cassava-based feeds in poultry, pigs and in dairy cattle. Their trials suggest that cassava-based feeds would be profitable where cassava prices lie at 60% to 70% of the price of maize, a price point achieved in Zambia's northern cassava belt and dual staple zones (Table 1). Current annual maize use in the livestock feed industry, together with common international feed formulations, suggest that Zambia's feed industry could absorb on the order of 90,000 to 150,000 tons of fresh cassava per year.

Industrial uses of cassava derivatives in the manufacture of paper products, wood processing, artificial sweeteners, ethanol and other manufactured goods offer a third potential market for Zambian cassava. Currently, a handful of industrial enterprises, primarily on the Copperbelt, use cassava flour in their packaging, paper products and wood processing activities, although volumes currently do not exceed 300 tons of cassava flour, or 1,000 tons of fresh roots, per year. In Zambia, where petroleum-based fuels command among the highest prices in the world, ethanol production from cassava could potentially absorb on the order of 100,000 tons of fresh cassava per year, given current volumes of fuel consumption and assuming a 10% substitution between ethanol and petroleum-based fuels without modification of vehicle carburetion systems. Cassava-based sweeteners could likewise absorb significant volumes, possibly in the range of 40,000 tons of fresh cassava per year.

4. Realizing cassava's commercial potential

Cassava markets in Zambia hold significant potential for growth. In the northern cassava belt, the largest markets will likely be for cassava-based convenience foods such as gari and cassava-based maheu. In the maize belt, the largest potential markets include the livestock feed industry, the fresh market for human consumption, the market for composite flours, and

industrial uses as a food sweetener. All together, prospective markets could accommodate an approximate doubling of national cassava production, a growth that represents a six-fold increase marketed volumes.

Achieving this commercial potential will require continued public funding for cassava research and distribution of improved planting material necessary for maintaining cassava’s current productivity-based price advantage over alternative carbohydrates. Second, product development by food technology specialists will be critical to the emergence of prepared foods that promise the greatest potential for cassava-based commercial development. In doing so, regional technology sharing, particularly with cassava processors in Malawi and Mozambique, may offer prospects for jump-starting Zambian cassava processing.

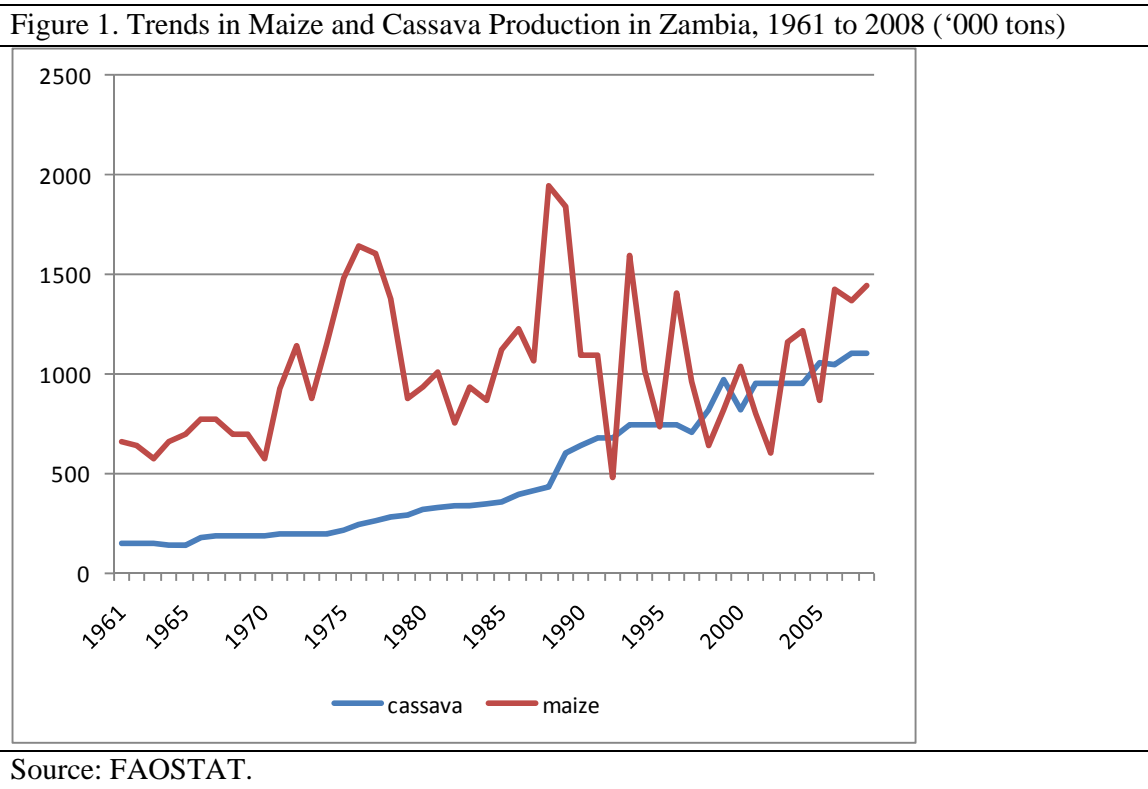
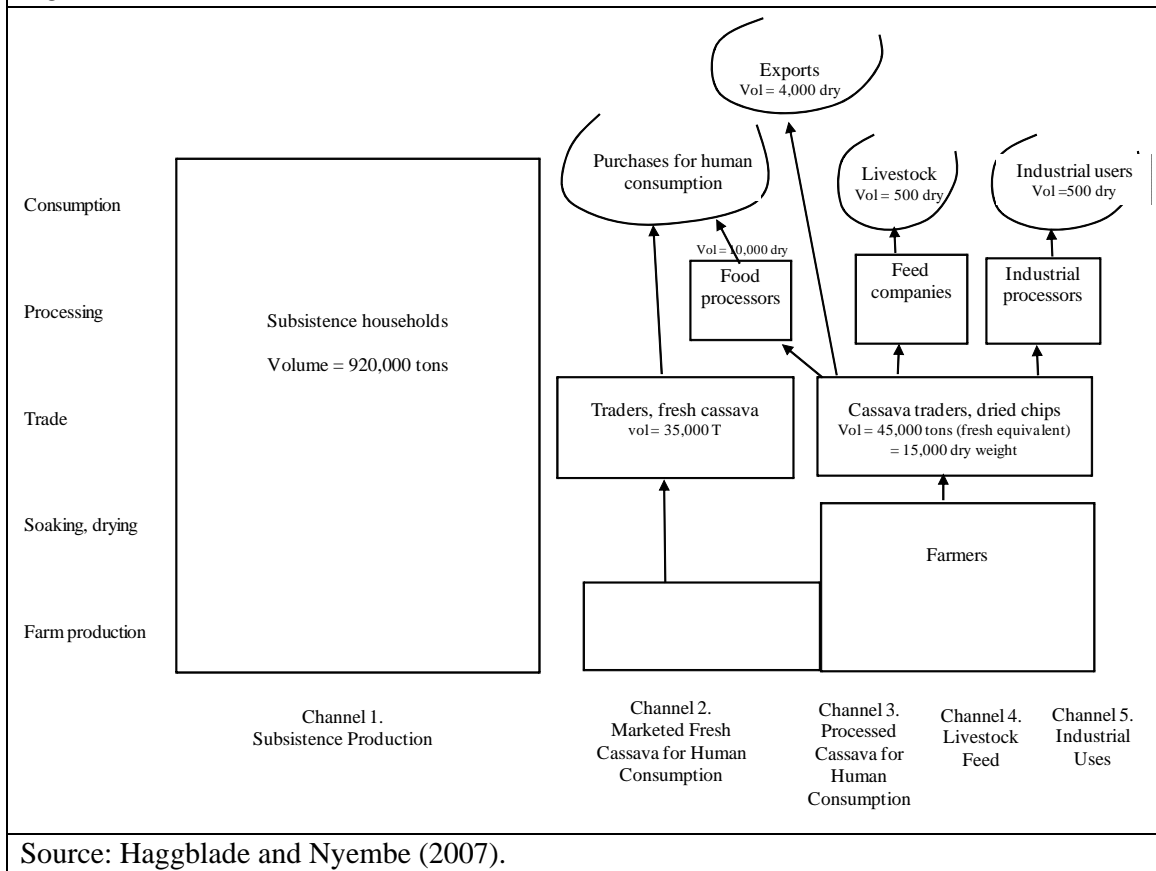
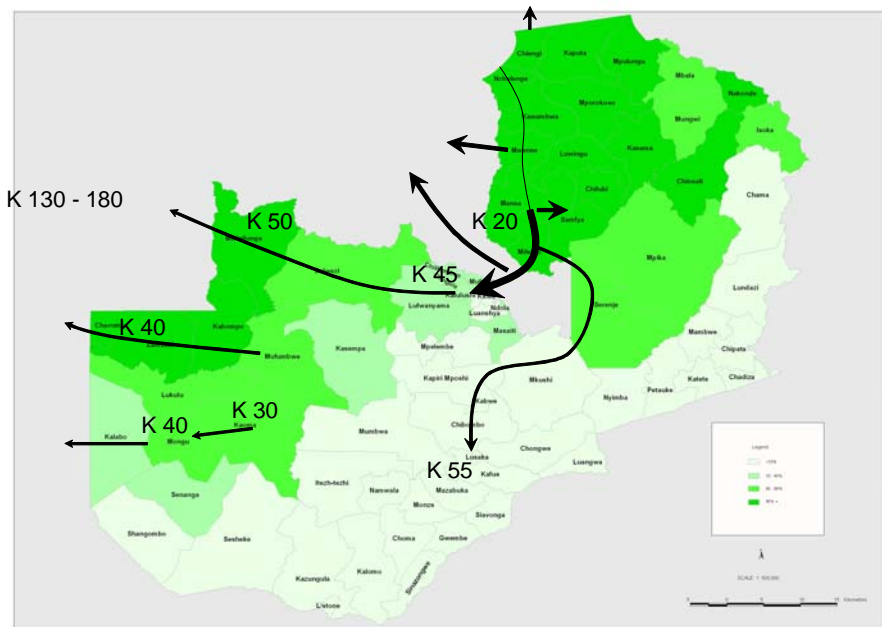


Figure 2. Zambia's Cassava Value Chain, 2005



Source: Haggblade and Nyembe (2007).

Figure 3. Dried Cassava Trade Flows and Wholesale Market Prices (‘000 K/ 50 kg bag)



Source: Haggblade and Nyembe (2007).

Table 1. Relative Cassava and Maize Prices by Food Staple Zone, November 2006

Product	Prices (Kw/kg)		Relative prices cassava/maize	
	cassava	maize		
Cassava-based dual staple zone				
Mansa	flour/mugaiwa	444	889	0.50
Kawambwa	flour/mugaiwa	444	778	0.57
Dual staple zone				
Kasama	chips/grain	469	778	0.60
Serenje	chips/grain	444	667	0.67
Maize belt				
Lusaka	chips/grain	800	700	1.14

Source: Haggblade and Nyembe (2007).

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