STAPLE FOODS VALUE CHAIN ANALYSIS

COUNTRY REPORT - RWANDA

November 2009

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CONTENTS

ABBREVIATIONS AND ACRONYMS

BAIR	:	Bureau d'Appui aux Initiatives Rurales
BRALIRWA	:	Brasseries en Limonaderies du Rwanda
COAMV	:	Coopérative des Agriculteurs de Maïs dans la région des Volcans
CRS	:	Catholic Relief Service
DUHAMIC	:	Duharanira Amajyambere y'Icyaro
EDPRS	:	Economic Development and Poverty Reduction Strategy
FAO	:	Food Agricultural Organization
FRP	:	*Facilité de Refinancement Préférentiel*
FRW	:	*Franc rwandais*
FUCORIRWA	:	Fédération des Unions des Coopératives Rizicoles au Rwanda
GDP	:	Gross Domestic Product
GoR	:	Government of Rwanda
IFDC – CATALIST	:	*Institut Américain pour la Fertilisation des Sols et le Développement Agricole*
ISAR	:	*Institut des Sciences Agronomiques du Rwanda*
Kg	:	Kilogramme
MINAGRI	:	*Ministère de l'agriculture et des ressources animales*
MINAGRI	:	Ministry of Agriculture and Livestock Resources
MINICOM	:	*Ministère du commerce, de l'industrie, de la promotion des investissements, du tourisme et des coopératives*
MINIMEX	:	Minoteries – Import – Export
NGO	:	Non Governmental Organization
PADEBL	:	*Projet d'Appui au Développement de l'Elevage Bovin Laitier*

PAPSTA	:	*Projet d'Appui au Programme Stratégique de la Transformation Agricole*
RADA	:	Rwanda Agriculture Development Authority
RDI	:	Rwanda Development Investment
RDO	:	Rwanda Development Organization
ROPARWA	:	Réseau des Organisations Paysannes du Rwanda
RPSF	:	Rwanda Private Sector Federation
SOPAR		*Sociétés des produits animaux au Rwanda*
UCOPRIBU	:	*Union des coopératives des producteurs du Riz de Bugesera*
UCORIBU	:	*Union des coopératives rizicoles de Butare*
UCORIGI	:	*Union des coopératives rizicoles de Gisaka*
UCORIKI	:	*Union des coopératives rizicoles de Kivu*
UCORIVAM	:	*Union des coopératives rizicole de la vallée de Muvumba*
UNICOOPAGI	:	*Union des Coopératives Agricoles de Gikongoro*
Union TWIBUMBE	:	*Unions des onze coopératives rizicoles de Rwamagana, Kayonza et Ngoma.*
Vision 2020	:	Rwanda's Development Framework Policy Paper
WFP	:	World Food Program
COVEPAR	:	*Coopérative de Valorisation des Produits Agricoles Rwandais*
SPREAD	:	The Partnership for Enhancing Agriculture in Rwanda through Linkages
UNICOOPAGI	:	Union des Coopératives Agricoles de Gikongoro
COPROVAB	:	*Coopérative pour la promotion et la valorisation de la culture du blé*
SOTIRU	:	*Société des Travaux Industriels du Rwanda*
UNICOBLE	:	*Union des coopératives des blé*

EXECUTIVE SUMMARY

The agricultural sector remains at the centre of Rwanda's development programmes and is now recognized as the engine of growth that will drive poverty reduction in Rwanda and improved living standards for her people. It contributes around 38 % to the National Gross Domestic Product (GDP) and it stands out as one of the most strategic sectors to Rwanda's development and one of the Government of Rwanda's goals is to transform agriculture from subsistence to a modern sector as clearly set out in the EDPRS and Vision 2020.

Rwanda's achievement of estimated growth of 11.2% for 2008 is in no small part due to the impressive growth in agricultural production of 15.0%. Particularly noteworthy are the increases in food and export crop production that increased to the tune of 16.4% and 20.3% respectively. The increase in food production is both a result of the expansion of maize farming, and to a lesser degree wheat farming, as well as a recovery in cassava production, following the cassava mosaic epidemic that depressed production in 2006 and 2007.

The present work is a study conducted on staple food products in Rwanda from 2004 to 2008. This assessment focuses mainly on the value chain analysis particularly on production, distribution channels and marketing channels including volumes of sales. The study also looks at the main players in the chain, gaps between Import-Export on the selected staple food products, namely; maize, rice, cassava, wheat, ground nuts, beans and sorghum.

It also looks at the opportunities as well as challenges in the value chain especially for the selected staple food crops.

During the survey conducted, research pointed to major players in the value chain for each product. The main focus was to look on how they interact with each other from production, processing, selling and consumption. In fact, for each product consumed on the Rwandan market, analysis was limited on its sources of supplying, processing destination and its market for consumption.

The analysis has brought out several findings on various aspects of the study terms of reference, which we highlight below. Firstly the production of staple foods largely depends on traditional means where application of modern inputs is still on small scale and this is due to the high cost of these inputs and hence farmers cannot afford them. Most of these inputs are being imported from the neighbouring countries mainly Uganda, Kenya and Tanzania. It is important to note that the Ministry of Agriculture through Rwanda Agriculture Development Authority (RADA) has made impressive strides to secure these inputs and supply them to farmers at subsidized costs so as to ensure that these inputs are locally multiplied in order to reduce the existing deficit.

Further to the above, RADA also buys the seeds from the farmers at a slightly higher price than the prevailing market price to encourage more production. These initiatives deployed by RADA should be encouraged and supported so as to enhance more production. Limited availability of the agriculture inputs constrain farmers to produce enough output for their domestic consumption as well as for export purposes hence this perpetuates high dependence on food aid and leads to food insecurity and poverty in the Country. The study also observed that application of modern inputs such as fertilizers and seeds is limited to few crops such as maize and rice because of their demand and impact on reducing poverty. Other staple foods such as banana, cassava and potatoes have received insufficient attention in terms of fertilizers and hybrid seeds application.

Other relevant influential factors to production include; constraints related to soil degradation and demography. The Rwandan population growth which is currently growing at 2.9% annually is degrading the soil fertility.

Secondly, domestic demand for food and seeds still depends on imports because of low production that cannot respond to the increasing demands of the staple food. This implies that, even if production was increasing with time due to good implementation of policy in agriculture transformation, demand exceeds local production that makes Rwanda highly vulnerable in terms of depending on imported food and seeds.

The following tables show the seed needs for major crops and the certified seed produced by the private sector in the year 2008.

Crop	Cultivated area (ha)	Sowing rate (Kg/ha)	Seed needed (MT)	Seed production 2008 by private sector in tonnage
Maize	130000	30	3900	329.2
Rice	16000	25	400	228.1
Wheat	15000	100	1500	53.03
Beans	270000	70	18900	35.42
Soybean	27000	70	18900	1562.3

SOURCE: RADA

NB: This includes government provided seeds as well.

The table above shows that the volume of quality seed produced by the private sector is too low compared to the seed needs.

Because the seed formal distribution system is not able to provide the quality seed needed, the Government of Rwanda is obliged to import seed from neighbouring countries to implement the crop intensification programmme.

This table also shows seed import from 2008 to 2009(In MT)

Crop	2008A	2008C	2009A	2009B	Total
Maize	500	100	590	250	1340
Wheat	60	-	210	560	820
Potato	400	-	-	-	400

SOURCE: RADA

The table above shows that Rwanda still imports a lot of seed for its crop intensification program and the plans are underway to encourage the foreign companies involved in seed production to come and invest in the country and so far Kenya Seed Company has already established in Rwanda and intends to set up a both processing and distribution facilities. However, it is still at infant stage but currently they are focusing on production. Thirdly, the value chain flow system for major staple food products is still disorganized and traders prefer to work independently according to their profit.

The major problems confronting staple food production have been discussed above and they include lack of hybrid seeds and fertilizers which are key ingredients to boost productivity. The level of transformation and value added process is still at infancy level however it is the Government of Rwanda priority program to modernize agriculture through value addition.

Eastern Province is suitable for: Maize, Rice, Sorghum, Beans, soybean and fodder

Southern Province is suitable for: Maize, Rice, Sorghum, Beans, soybean and fodder

Western Province is suitable for: Maize, Rice, Beans, and soybean

Northern Province is suitable for: Maize, Wheat, Sorghum, Peas, Irish potato

1. INTRODUCTION

Rwanda's Agriculture sector contributes about 38% of the National GDP and it accounts for about 85% of employment and 80% of the foreign earnings from the exports of the few primary products: coffee, tea, hides and skins, pyrethrum and horticulture. Almost 80% of the population derives their survival from Agriculture sector. It is important to highlight that despite much effort devoted into food production, exports of staple food represents the smallest percentage of the total agriculture exports.

The Economic Development and Poverty Reduction Strategy (EDPRS) &Vision 2020 seek to transform agriculture from the subsistence level into modernized farming.

The EDPRS has placed greater emphasis on agriculture productivity and the government of Rwanda is also highly committed to the Comprehensive Africa Agriculture Development Programme (CAAD) of the New Partnership for Africa Development (NEPAD).

This framework sets principles and targets that would enable African countries to achieve high rates of economic growth through investment in Agriculture therefore the government of Rwanda is one of the few African countries to embrace and put in practice these principles.

1.1 CONTEXT OF THE STUDY

The study is carried out in the framework of the East African Community, Common Market for Eastern and Southern Africa and EAGC with the support from the USAID COMPETE and its purpose is to enhance economic growth and food security within the Eastern and Central African countries.

The study also aims at contributing towards increasing African trade and competitiveness in regional and global markets by reducing barriers to trade, improving market access, and furthering regional integration agenda.

1.2 SIGNIFICANCE OF THE SCOPE AND OBJECTIVES OF THE STUDY

The study is of high importance to the policy makers as it provides deep insight on challenges, barriers and opportunities in the areas of stable food production, distribution and marketing in Rwanda.

The policy makers at national and regional levels should take into account these challenges and be able to craft good strategies that would improve the value and volume of staple food production while at the same time ensuring food security in respective countries.

This study will also help the funding agencies such as USAID to provide oriented technical and financial support to the agriculture sector so as to enhance its competitiveness.

At the regional level, this study will highlight some of the barriers that hinder the smooth inflow of stable food products from the region and recommend measures on how to reduce these barriers and ensure smooth flow of the cross-border trade.

1.3. METHODOLOGY

To effectively carry-out this study, three methods were employed:

The first one was to review existing studies and literature on agriculture policies and strategies in Rwanda focusing mainly on staple food production analysis the value chain.

The second method was to obtain first hand information from the key institutions engaged in promotion and supporting agriculture sector in Rwanda and this involved open discussion and interviewing the technicians in the government ministries as well as the private led institutions such as Private Sector Federation.

The third one included the field survey and data collection, where research assistants had to go to the field and visit the farmers in order to ascertain the challenges they face in the supply chain.

1.3.1 Study limitations

The study was constrained by lack of statistical data related to value chain analysis for most of the crops. The data that is available spans the period 2006-2009. This data collection challenge had an effect on the trend analysis.

Second challenge relates to the scope and duration of the study. The period allocated to this assignment was too short given the fact that the study was so comprehensive.

The third challenge is limited knowledge among the farmers and traders on the value chain analysis. Most of the farmers and traders do not keep information or statistical data on who supplies them with input and who buys their produces. The information on the value chain is a bit scattered and un-coordinated. However the Ministry of Agriculture and Animal Resources is investing a lot of resources in building the capacity of its staff to collect, analyze and disseminate statistical data.

While conducting the value chain analysis study, we noticed that Ministry of Agriculture and Animal Resources (MINAGRI) in collaboration with Food and Agriculture Organization (FAO) have launched what is called the Country STAT which is a national statistical information system for food and Agriculture. The system is intended to harmonize and integrate data on food and Agriculture coming from different sources.

We hope that the program will address the issues related to data collection and dissemination.

1.3.2 Structure of the report

This report is structured into four parts. The first part covers an overview of the Rwandan economy covering the significance of the agriculture sector, dynamics of the growth of the sector, main commodities produced, main challenges and constraints as well as the agriculture sector policies.

2.0 AN OVERVIEW OF THE AGRICULTURE SECTOR IN RWANDAN ECONOMY

Rwanda produces a wide range of agricultural products comprised of both cash and food crops. The main cash crops include coffee, Tea and Pyrethrum these crops constitute about 80% of the total exports. The Government of Rwanda has also made greater strides to diversify her exports through investing heavily in horticulture geared towards exports.

Table 1: Production of Export crops (in tons)

	2005	2006	2007	2008	Annual % change
Tradable Coffee	18 597	26 598	14 850	18 596	25.2
Ordinary	17 497	24 752	12 572	15 942	26.8
Full washed	1 100	1 846	2 278	2 654	16.5
Dry Tea	16 458	16 973	20 473	19 965	-2.5
Pyrethrum extract	19.5	30	15	4.6	-69.3

Source: NATIONAL BANK OF RWANDA ANNUAL REPORT 2008

The country produces the following products as staple foods; maize, sorghum, rice, wheat, beans, soya beans, Irish potato, sweet potato, cassava and bananas. These products are produced in different provinces in the country.

As already highlighted, agriculture is the main driver of Rwanda's economic growth since it contributes 38% to the Gross Domestic Product and it employs the majority of the Rwandan population meaning that its transformation has got the greatest impact in terms of poverty reduction as well as wealth creation of the country.

The Rwandan economy is also driven by other sectors such as the service sector which contributes about 47% of the GDP while manufacturing sector accounts for about 16% of the GDP.

The table below shows the trend of the three sectors and how they contribute to GDP.

Table 2: Real Growth rate by Activities (5-year averages in percentages)

	Share of total GDP		Average Annual growth	
	1996-2000	2001-2006	1996-2000	2001-2006
Gross Domestic Product (GDP)	100.0	100.0	10.8	6.4
Agriculture	37.7	36.4	9.5	4.8
Food crop	31.9	31.4	9.9	5.1
Export Crop	1.0	1.1	11.7	6.3
Livestock	3.0	2.2	7.8	3.5
Forestry	1.5	1.3	10.7	3.7
Fisheries	0.3	0.4	29.9	3.7
Industry	15.1	14.2	7.5	8.1
Mining and quarrying	0.3	0.6	24.5	41.3
Manufacturing	8.2	6.8	4.1	6.0
Of which: Food	1.5	1.7	8.1	9.1
Beverages, & tobacco	4.2	2.5	-4.4	4.6
Others	2.4	2.7	19.5	6.5
Electricity, gas, & water	0.6	0.5	11.3	4.2
Construction	6.0	6.3	11.9	9.6
Services	41.9	43.8	11.7	7.4
Wholesale & retail trade	10.7	9.7	2.2	6.0
Hotels and restaurants	0.8	0.9	25.2	6.6
Transport, storage, communication	4.8	6.0	15.5	9.4
Finance, insurance	2.6	3.5	17.7	13.3
Real estate, business services	10.3	9.6	11.2	5.0
Public administration, education, health	12.4	13.2	21.0	7.9
Other personal services	0.3	0.9	141.2	12.1
Adjustments	5.4	5.7	38.5	5.6
Less: Imputed bank service charge	-1.6	-1.7	4.7	9.6
Plus: VAT and other taxes on products	7.0	7.4	23.4	6.4

Source: National Institute of Statistics data & EDPRS documents

3.0 THE STATUS OF THE AGRICULTURE SECTOR

3.1 DYNAMICS OF THE GROWTH SECTOR

The Rwanda agriculture sector exhibits high level of dynamism as there are no restrictions regarding the investment in the sector. The EAC Economic operators are allowed to come and invest in the sector as long as they fulfill the requirements provided by the Rwanda investment code. It is important to point out that investors from the region especially those from EAC and COMESA are given the same considerations and treatment like the local ones.

The dynamism of the sector is also reflected in the strategic plan for the transformation of the Rwandan Agriculture Phase II. This strategy is developed in line with Rwanda Economic Development and poverty reduction strategy which also identifies agriculture as the key priority sector for Rwanda's economic development and poverty reduction.

The realization of the Rwanda vision 2020 and EDPRS will primarily depend on the dynamism of the agricultural sector and in particular the growth and sustainability of food crops. Therefore government of Rwanda is highly committed to provide enabling environment for the private sector to take a leading role in the agriculture investment, productivity as well as exports.

The Agriculture transformation program 11 commonly abbreviated as PSTA11 hinges mainly on the following axes:

- Intensification and development of sustainable production systems. This involves demonstration to farmers and villagers the benefits of the soil fertility and technology to preserve soil.
- Support to the professionalization of the producers this involves strengthening the sector's social capital base, strengthens the entities in the sector charged with developing and disseminating new technologies and knowledge about the sector.
- Promotion of commodity chains and agribusiness development entails creating a conducive environment for businesses and entrepreneurship with easy access to regional and international markets

- Institutional development implies that the private sector will be the engine to drive the agricultural sector transformation; however the government should clearly define the framework in which the private sector should operate. The actions under this axis should involve crafting and incentives to induce the private sector to play important role in the agricultural development.

The overall objective of the above strategic axes is to ensure that there is an added value to the agriculture productivity and farmers as well as agro-entrepreneurs are provided with the necessary support with the concerned government institutions.

3.2 THE MAIN COMMODITIES PRODUCED

As already highlighted, Rwanda produces a wide range of agricultural products consisting of both cash and food crops. The main cash crops include coffee, Tea and pyrethrum while food crops include maize, sorghum, potatoes, bananas, cassava, beans, soya beans, yam and Taro ground-nuts and rice to mention but a few. The country also produces variety of fruits and vegetables such as avocados, mango, passion fruits, papaya, apples, pineapples and oranges.

3.3 THE MAIN CHALLENGES AND CONSTRAINTS

Rwanda's agriculture sector faces daunting challenges related to high population growth that affects the size of the land that would be used for agriculture farming. The current statistical figure indicates that the annual population growth is estimated at 2.9% of the GDP and is considered to be the highest compared to the region due to this factor the country is also subjected to high soil erosion which affects the level of productivity.

The second challenge is the low application of modern agriculture inputs such as fertilizers, hybrid seeds. Most of the farmers do not apply fertilizers and hence this result in the low yields.

Another challenge is that food crop production dominates cash crops hence affecting the revenue generated from the export sector. We also observed that most of the food crop produced is meant for domestic consumption very little is exported in the region and what is exported is not captured within the official statistics.

The good news is that, the government has now focused much efforts on agriculture diversification geared towards exports. This diversification mainly focuses on production of horticulture for the export purposes.

The sector is also constrained by low public and private investment in terms of infrastructure and extension services to the farmers, the private sector is still hesitant to heavily invest in the sector due to high risks involved.

The agriculture sector is also constrained by lack of well trained agriculture experts to advice farmers as well as agro-entrepreneurs on better methods of farming. Most of the agriculture experts are fresh graduates who lack hands on experience on practicing modern farming.

The farmers are also affected by rain variation patterns, the rainy season is unpredictable hence the farmers cultivation planning systems. However this challenge is being addressed by MINAGRI in collaboration with Food and Agriculture Organization who are installing rain gauges in 3 sectors of each district and this will improve on planning and cultivation period by the farmers.

3.4 RWANDA AGRICULTURE POLICY

Rwanda crafted its agriculture policy in March 2004 and the policy is built on six strategic axis and these include the following:

- Food security through the creation of an environment favourable to income generation;
- Modern, professional, innovative and specialised agriculture;
- A strict market oriented agriculture (domestic, sub-regional, regional and international);
- Fair distribution of benefits from all products resulting from different stages of processing;
- Integrated and diversified agriculture:
    - Agriculture integrated in animal husbandry;
    - Agriculture and livestock integrated in rural development.
- Agriculture friendly to the environment.

These axes are also aimed at transforming the agriculture from subsistence level to market oriented and the agriculture policy is guided by the vision 2020 and EDPRS.

4.0 VALUE CHAIN ANALYSIS FOR SELECTED STAPLE COMMODITIES

4.1 MAIZE

After analysis of the maize section we note that the following is lacking:

- Price trends
- Analysis of Vertical and Horizontal Integration
- End User Analysis of maize – various forms in which maize is used and consumer preferences

4.1.1 **Maize Value chain map**

Table 3: Commercial farmer
Nyagatare-4,600 kg/Ha

Category of transaction	Value (RF/Kg)	Value Added	Return on Investment	months	Annual return on investment
1. Input Retail (at cost NGO)	(3.0)				
Total costs of inputs	(3.0)				
Input price	**3.0**	0	0%	0.033	0%
2. Production					
Field preparation	(7.6)				
Seed	(3.0)				
Organic fertiliser	8.7				
NPK Fertiliser					
Urea fertiliser					
Planting labour	(7.8)				
Weeding 1	(5.7)				
Weeding 2	(2.8)				
Guarding	(1.3)				
Harvesting	(4.3)				
Field transport	(3.5)				
Fertiliser application	(0.4)				
Shelling	(1.1)				
Storage (hired)	(1.3)				
Packing	(2.0)				
Land user fees	(0.2)				
Financing costs					
Total costs of production	(49.9)				
Farm Gate Maize Price	100	50.17	101%	6	201%
3. Milling					
Maize price	(100.0)				
Transport and handling	(14.3)				
Milling loss (30%)	(30.0)				
Milling cost/kg out turn	(95.0)				
Sale of bran	(30.0)				
Packing and labelling	(4.0)				
Financing costs					
Total milling costs	(213.3)				
Mill Gate price	220.0	6.71	3%	0.5	76%
4. Wholesale Traders					

Mill price	(220.0)				
Transport	(10.0)				
Handling	(1.5)				
Trade finance					
Total wholesaler costs	(231.5)				
Price to Retail shop	(250.0)	18.5	8%	0.25	384%

Source: Inspired International; a study done on value chain on Rwanda, April 2008

4.1.2 .Situation of maize production in Rwanda

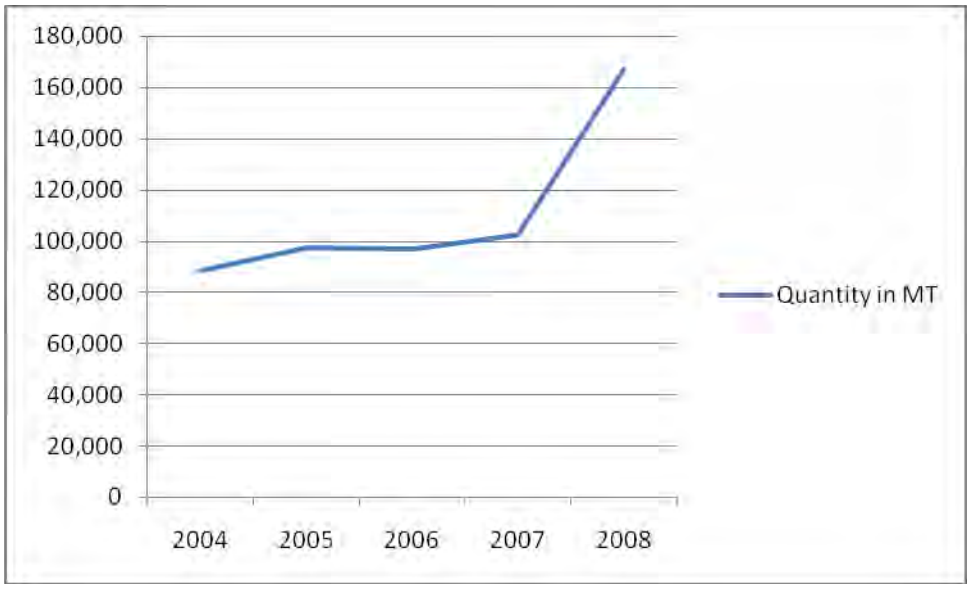
Before 1995, the production of maize was less developed in Rwanda. The market of this product was developed in rural areas; however, it's more organized in urban areas. Maize was considered to be the product of food security in rural areas and later became a product for daily consumption, just like in most of Rwanda's neighboring countries where it is an important product that enhances food security.

4.1.3 The supply

Two circuits of supply are observed on the Rwandan markets: the circuit of national production and the circuit of importation.

4.1.4 Analysis of national production

Graph 1: Evolution of Maize production in Rwanda from 2004 to 2008



Source: MINISTRY OF AGRICULTURE

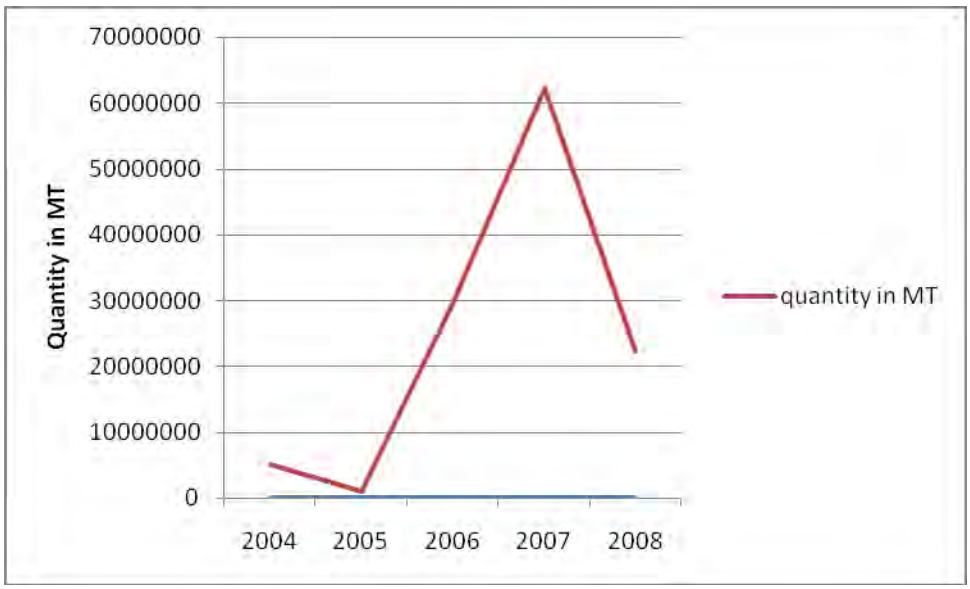
The national production of maize is stable from 2004. It has been increasing and a boom is observed in 2008 with a result of regional crop intensification. Its production is valued at between 80,000 to 170,000 metric tons per year. Map is annexed on the report.

4.1.5 MAIZE CONSUMPTION

While undertaking this study we observed that all the maize produced is consumed locally but the plans are under way to produce for exports. The farmers have been provided with inputs at low cost and are sensitized on how to cultivate and grow maize.

It is also important to note that even the local demand is not satisfied with the current maize production hence the gap is filled with imports from the neighbouring countries.

Graph 2: Analysis of importation for maize from 2004-2008



Source: Rwanda Revenue Authority

From 2005 to 2008 importation was increasing because of the new installation of processing factories like MINIMEX which started operations in 2006 in addition to the already existing processors. Again it is in the same period of launching implementation of new policy of crop intensification at regional levels thus its result has not yet come out. Instead the production in 2008 has replaced a percentage of imports. Much of the maize is imported from Uganda and Tanzania.

4.1.6. Description of the Rwanda maize value chain mapping

Maize trading is very dynamic with complex marketing organization traversing countries within the region. The chain comprises farmers, rural assemblers, traveling traders, wholesalers, retailers and consumers (**The Figure below**). In some cases, there is vertical Integration, aimed at maximizing returns.

Figure 1: Maize Value Chain

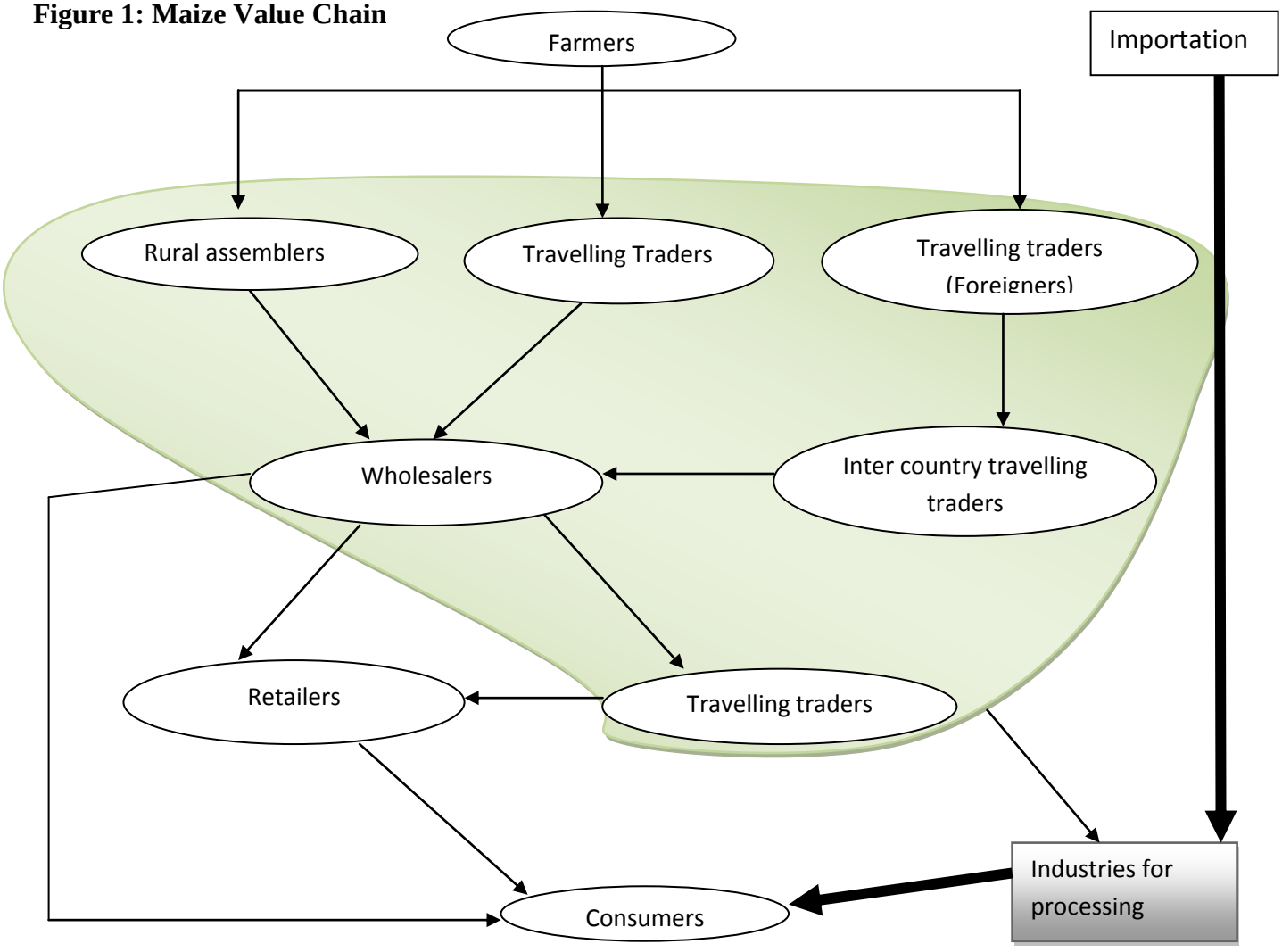


Table 4: Local Food production development (in thousands of tons)

	2004	2005	2006	2007	2008	% change 2008/2007
Bananas	**2469.7**	**2 813.1**	**2 653.5**	**2 698.2**	**2 603.9**	**-3.5**
Roots and Tubers	**2634.8**	**3 118.1**	**2 930.1**	**2 543.5**	**3 815.1**	**50**
Sweet potatoes	908.3	885.5	777	845.1	826.4	**-2.2**
Irish Potatoes	682	1 314.1	1 285.1	769.9	1 161.9	**50.9**
Cassava	912.1	781.6	742.5	776.9	1 681.8	**116.5**
Cocoyam (taro)	136.4	13.9	125.4	151.5	144.9	**-4.4**
Cereals	**314.9**	**409.4**	**361.7**	**355.6**	**461.2**	**29.7**
Sorghum	163.8	228	187.4	166.8	144.4	**-13.4**
Maize	88.2	97.3	91.8	102.4	166.9	**62.9**
Paddy Rice	46.2	62.2	62.9	61.7	82	**32.9**
Wheat	16.8	21.9	19.5	24.6	67.9	**175.5**
Legumes	**244**	**252.3**	**333.7**	**404.9**	**392.3**	**-3.1**
Beans	198.2	199.6	283.4	331.1	308.6	**-6.8**
Garden peas	16.8	18.9	14.2	16.6	17.2	**3**
Ground nuts	10.8	10.1	9	16.2	24.5	**51.2**
Soya beans	18.3	23.7	27.1	41	42.1	**2.8**
Fruits & Vegetables	**430.8**	**700.2**	**858**	**903.4**	**961.6**	**6.4**
TOTAL FOOD PRODUCTION	**6099.3**	**7 293**	**7 137.1**	**6 905.6**	**8 234.2**	**19.2**

Source: Rwanda National Bank annual report 2008

Description of the Value Chain

Farmers

These are the first link in the marketing chain. They are both producers and consumers. Over 52% of the production is consumed on farm level. They sell during harvest rarely storing due to cash needs. Later they buy back maize for use as seed and food. Transactions are either carried out on the farms (household levels) or at the market. At the market, farmers transact with consumers, as they take on the added function of transporting produce to market.

Farmers generally have limited market power. They usually sell smaller quantities and enjoy little bargaining power, as they need cash. They lack credit. They typically sell as individuals and are essentially price takers. Farmers, who live near the main road, have better market information.

Rural traders

Given the fragmented nature of production, rural traders play a vital role in collecting produce from farmers. They have contacts with farmers and move from farm to farm purchasing the small quantities farmers offer. They store the produce waiting to supply larger orders from traveling traders. Rural traders are usually found in small trading centers, which can be reached by trucks. Their inputs are labour and working capital.

The produce is collected and kept in sacks. Transport of sacks to collection points or to rural traders is carried out by farmers or by rural collectors themselves. The collectors often buy in the field and hire labor to transport sacks either on their heads or other affordable means of transport.

In a few cases, rural collectors buy and store produce in their premises for months. Those who store enjoy relatively higher margins although a few traders talked to revealed that this might not be the case due to supplies from elsewhere. However, where it occurs, their gross margins are higher. Rural traders provide growers with direct payment in cash. The service they provide traders where they act on their behalf is assembly of complete truckloads.

Traveling traders

Within producing areas traveling traders purchase maize from either farmers and/or rural traders and thereafter weigh and pack the maize. Normally, they traverse long distances and transportation is their main function.

Transport is a major constraint and traders try to minimize this cost by increasing the weight of the bag. The transport cost is charged per bag. As bags are not weighed during transportation, traders tend to reduce costs by moving large sized bags of more than 100 kgs. Consequently this cost is passed on to the transporter in form of high rates of vehicle depreciation resulting in high maintenance costs. The profit margin of these local transporters varies between 10% and 35% per load, depending on distance and road quality.

Travelling traders at times sell in weekly rural markets. Turnover per trader is limited with volume rarely exceeding 2 sacks. Most traveling traders have good contacts with transporters. The tonnage of the trucks varies from 3.5 to 5 tones. These trucks dominate transport from the supply areas to the important Nyabugogo wholesale market in Kigali.

Urban wholesale markets

Nyabugogo is the main wholesale market supplying Kigali Urban area. Several wholesale stores exist in this location and provide a stop center for maize supplies from within and outside of Rwanda. These traders play an important role as they store and make the product available to the consumers when they need it.

Industrial Transformers

This chain of Selling directly to industries for transformation is less developed in the country because a big quantity of maize is sold in raw form. This implies that every farmer sells his own maize. In addition, the country's production does not cover the demand of these industries and also the artisanal grinding mills at household level compete with these big industries. In Eastern regions where maize is dried before selling, the cooperatives are present and are funded and supported by projects like PASB or Rwanda Development Organisation (RDO). They have enough means of buying all the maize from their members and transform it into maize flour.

In the Northern Province, COAMV buys the total production from its members for purposes of transforming it into flour. In 2008, 6500 tones were bought at the same price in the market with the difference of 20 RWF per kilo. This fragmented chain practically has an impact to the quality of output produced and to the functioning of big industries in the country.

Evidences from three transformers MINIMEX, MAISERIE DE MUKAMIRA and SOPAR shows us that above 65% of the raw maize is collected from either national or regional traders who travel collecting maize from different farmers or importers and re-sell with a small different margin, while 75% of the total maize entering in their production line is imported from Uganda and Tanzania. There are no limits and conditions to the suppliers. Interested traders sign a contract with industries and they can supply any quantity they can as longer as they meet quality requirements.

The produced flour is sold to independent traders who in turn re-sell to various consumers, including major buyers in the country, such as; prisons, secondary schools, NGO's (WFP, GTZ, World Vision, CRS), supermarkets and independent retailers. According to the processors there is no quantity is exported. Other sub products like grits from MINIMEX are sold to BRALIRWA for its fermentation process and the rest to some farmers as animal feeds.

Retail markets

Distribution in urban areas is through retail markets mostly with stalls or small retail shops in the city neighborhood. All retailers buy their maize from Nyabugogo stores and generally add not more than 5 Frw as their marketing margin. They all calculate their price based on the Nyabugogo price. Therefore, prices in different markets vary directly with each other.

The circuit of the imported corn

The imported corn is dominated by the wholesale market of Nyabugogo located in Kigali. The break of load is made at the level of this market which receives the Ugandan exporting dealers and the Rwandan importing dealers. Big warehouses of stocking are in this market.

Transfer Uganda – Nyabugogo

The imported corn can be routed either by Ugandan exporters or by Rwandan importers. The Ugandan exporters seem to route the biggest part of importation. The dealers in Nyabugogo market find it more comfortable to deal with the Ugandan traders. Sometimes, the traders deal with each other directly and in some limited cases, through middlemen, commissioners or brokers.

During the assessment, what is observed is that there are few barriers for Rwandan traders to transact and interact with their counterparts in Uganda. It should be noted that the data on cross border trade especially for informal delears is difficult to get and be aggregated as per the current system at the borders. However, the customs department within Rwanda Revenue Authority is in the process of putting in place the right system to capture cross border trade statistics.

Sales towards Kigali

It seems that the biggest part of the grain is intended for Kigali city given high demand of this product, because the most part of the dealers of the city are also processors of maize into maize flour. They have their own grinding mills and promote their trade by assuring the transformation of the product. The flour is sold for consumption in the city of Kigali, but also a portion of product is sold to other provinces in the up country. However, according to provincial requests arrangements can made to secure within the provinces without first going to Kigali.

It seems that a very big portion of the flour of corn is purchased by social sector such as schools and prisons.

Sale towards the province

The sale from the wholesale market goes towards processors in Kigali or in other zones of the country. These dealers come to search for themselves the product in Kigali. Purchases do not necessarily involve big quantities because the dealers of provinces do not have enough capital. Requests are usually regulated by the successive crop of food-producing products. In general, purchases involve 5 - 10 tones per dealer. The purchase in big quantities is not recommended because the product perishes faster due to lack of modern storage facilities and the appropriate treatments. For the dealers in provinces, the corn is not considered as the most important product for their economic activities Sorghum and beans come first in their business undertakings because don't require a lot of care and treatment .

Transfer Uganda – Ruhengeri

A big number of dealers in the city seem to be importing their corn through the border post of Cyanika. However, these purchases represent a spartial of the product.

Transfer Congo – Gisenyi

Part of the supply of Gisenyi is from DR Congo. It is the Congolese dealers who deliver the product to the processors and this originates from north of Goma. This corn is of the (bitter) yellow corn which is of use for the manufacture of yellow paste; it is highly appreciated by certain segment of consumers. This importation seems to be negligible when computing the total imports.

Transfer Tanzania – Rusumo

Apart from Uganda, Tanzania also supplies Rwanda with maize. This was confirmed by some processors in Rwanda like SOPAR and MINIMEX that some dealers according to the seasons, they supply them maize from Tanzania but not as much as Ugandan suppliers.

Stocking and Processing of Maize in Rwanda

Table 5: Processors of maize in Rwanda and their capacities

Maize	**Capacity/Output (tones/Year)**
MINIMEX	52000
COAMV	4950
MAISERIE	4352
DUHAMIC ADRI	600
SOPAR	4500
Total	61902

Source: Ministry of Agriculture of Rwanda

The processors have warehouses adapted to the modern storage of the corn. However, their capacities of storage are still low. These capacities of stocking which are important for companies, like MINIMEX and the Maïserie of Mukamira are unfortunately slightly used because both firms work in weak productive environment. These processing units often produce at level below their productive capacities.

Industrial structures of transformation of the corn

These are four main corn processors in the country in Rwanda. MINIMEX Company, DUHAMIC-ADRI, the Maïserie of Mukamira and SOPAR.

Here-below we provide a brief profile of each company.

The MINIMEX COMPANY

It was established in 2005 and commenced operations in November 2006. This company has the capacity to transform 48 tons of maize / day but the target is to have a capacity of 150tons / day.

Production capacity
The management indicated that apparently they produce below capacity and this is due to insufficient supply of the raw materials notably maize corn which is short in supply in Rwanda. The deficit is covered by the imports from neighbouring countries in Uganda and Tanzania. Statistics from the company indicate that in 2006, the factory needed 1600 tones among which 20% only were locally produced.
In order to boost its processing capacity, the company has established good relationship with the suppliers from the region especially from Uganda.

Company Sales
The company produces, in most cases, corn flour. It also produces the *"gritz"* of corn for the beer brewing company (BRALIRWA) and cattle feeds.

For the sale of flour, it encounters a very strong competition from the small craft transformers in the city of Kigali. Their expense of transformation does not exceed 20 Frw / kg and the MINIMEX has investments to be reimbursed and must pay VAT (18 %), which is not the case for the smaller grinding transformers.

MINIMEX appears to be overwhelmed by the low supply of inputs and this affects its return on investment and yet it has to pay back the investment loan.

To resolve its problems, the company needs to plan on working only on the imported corn. Local production should be considered as negligible in its production process or they should invest heavily in corn production.

The DUHAMIC-ADRI Association

In its plan, it supports activities of credits and avails inputs of chosen seeds and agrarian tools. It works on several food products of study of farm produce: fruits, soya, corn, rice.

Apart from the technical support, the association fabricates a highly nutritious product based on the corn flour, soya and sorghum. The purchase of products are made first and foremost to producers' associations which supervises them and are supplemented by purchases on the market to the dealers (70 % at least). These purchases are made without contract and on the basis of the price of the market on the day of delivery. Products are sold first and foremost in charitable organizations (67 % of sales). Certain products are categorized as follows: the product UNIMIX which is a mixture of flour of soya, corn, vitamins and mineral is intended for World food program (WFP). However, DUHAMIC-ADRI is especially known for another product, Sosoma (n ° 1 and 2 – mixture of flour of sorghum, corn and soya)) which is a registered trademark. The finished product is partly sold to regular purchasers such as WFP or USAID.

The Maïserie de Mukamira
The factory was constructed in 1987 by the Rwandan Government with a goal of producing flour and oil from corn. It was destroyed during the war in 1994, and was privatized in 2004 and its rehabilitation was finished in 2006. It restarted production in January, 2007 with a capacity of transformation of 17 tons of corn a day that is 5.000 tons per year. Nowadays, it produces only 5 tons of corn flour a day due to lack of raw materials.

The cooperatives of transformation
There are two cooperatives of producers that are involved in the transformation of corn: COAMV in the North, in Cyanika and Rwanda Development Investment (RDI) that has a unit of transformation for maize of its cooperatives in UMUTARA, Eastern Province which works under Rwanda Development Organization (RDO).

- COAMV[1]
  The cooperative is located in the northern province of Rwanda, on the Ugandan border. It started its activities in 2000. It is composed of 312 associations, with 12,323 members – all producers of corn. Its activity is the transformation of the corn into flour. Products are sold on Kigali and on the border with Congo in most cases. The main customers are the schools which buy through contracts with postponed payment and dealers.
- The RDI company
  (Rwanda Development Investment) was created by Rwanda Development Organization (local NGO financed by TROCAIRE) in 2006. This company produces flour from corn (80%) and *"gritz"* of corn (20%). It has a 400-500 kg / hour capacity that is about 1.200 tons a year (i.e. 8 hours a day).

Small grinding mills
There are many small mills belonging to the dealers in the city of Kigali and in other cities up country. The expenses of transformation vary between 20 and 30Frw / kg.

Demand in quality and quantity in maize for processing in Rwanda

Demand for quality

Quality is an important market variable. Identified quality parameters include; color, cleanliness and dryness or moisture content all of which impacts on market margins for traders. Color is the main quality criterion for flour. If it is bright yellow, it's not preferred and there is less yellow flour on the market.

The survey from processing industries like MINIMEX and SOPAR found that although Rwandan maize is cleaner than maize from Uganda, Rwandan maize contained different

[1] Coopérative des Agriculteurs de Maïs dans la région des Volcans

varieties and different colors, implying that the incentive to sort and grade had not yet filtered to the producers. Mixed color maize yields poor flour after milling. As a result, traders prefer maize from Uganda as this is uniform thereby yielding a uniform white color. However, traders pointed out that maize from Umutara is also of the same color.

WFP is a major buyer but the flour should be of good quality with one color while the grain moisture content should be below 14%. The **table** below gives other quality specifications from WFP – Rwanda.

Table 6: Quality specifications for maize, WFP-Rwanda

Specification Maximum	
Moisture content (maximum)	14.0%
Insect damage (maximum)	3.0%
Broken	2.0%
Shriveled, diseased & discolored	5.0%
Other colored grains (maximum)	4.0%
Foreign matter	0.5%
Total defective grains	9.0%
Aflotoxin (maximum)	10 ppb

Source: WFP-Rwanda

As a requirement, the product should be fumigated and should be free from live weevils. The quantity of dead weevils should not exceed 10 per kilo

Table 7: Demand for quantity and Trading Margins

Period	**Production (MT)**	**Importation(MT)**
2004	88,209	5,248,761
2005	97,251	1,131,975
2006	96,662	29,989,281
2007	102,447	62,318,537
2008	166,853	22,343,249

Source: WFP-Rwanda

The total quantity of maize marketed is more than internal supply and Rwanda is a net importer of maize. **From 2004 to 2008,** about 99.54 percent of maize was imported while 0.45 % was from national production; this led us to classify Rwanda as net importer for maize consumed. This is met through imports from mainly Uganda and Tanzania.

It is quite difficult to obtain thorough data on volume and market margins as they touch on the incomes of the traders who may not wish to reveal their profitability due to fear of paying high

taxes . However volume and Margins change according to season, with farm gate prices increasing towards harvest time.

Apart from seasonal fluctuations, volume and margins are also affected by short-term fluctuations in trading activities in terms of supply, depending on the quantities coming on the market, mainly due to the supply from Uganda. According to the travelling traders, market prices are highly volatile and may vary by as much as the traders margin on a daily basis.

4.2 RICE

Table 8: Rice Value Chain

Rice Value Chain map
CODERVAM-60 Ares, 4800 kg/Ha

Category of transaction	Value (RF/Kg)	Value Added	Return on Investment	months	Annual return on investment
1. Input Retail					
NPK Fertiliser	(14.6)				
Urea fertilizer	(6.7)				
Cypermethrin	(2.5)				
Binemil	(0.9)				
Transportation	(0.6)				
Sub-dealer commission	(0.6)				
Financing costs					
Total costs of inputs	(25.9)				
Input price	**34.3**	8.38	32%	0.5	777%
2. Production					
Water	(2.1)				
Seed	(4.4)				
Purchase inputs	(34.3)				
Field preparation	(7.5)				
Nursery preparation	(4.2)				
Transplanting	(2.1)				
Planting	(5.5)				
Weeding labor	(20.8)				
Fertiliser application	(0.4)				
Bird scaring	(4.2)				
Harvesting & handling	(8.8)				

Drying	(1.7)				
Handling & winnowing	(3.1)				
Packing	(2.0)				
Transport	(1.6)				
Financing costs					
Total costs of production	(102.5)				
Farm Gate Maize Price	150	47.5	46%	2	93%
3. Milling					
Cost of paddy/kg outturn	(150.0)				
Milling costs/kg outturn	(25.0)				
Milling loss (40%)	(60.0)				
VAT/Kg outturn	(3.0)				
Sale of bran	4.3				
Milling costs per kg of out turn	(25.0)				
Financing costs					
Total milling costs	(258.7)				
Mill Gate price	360.0	101.29	39%	0.5	940%
4. Wholesale Traders					
Mill price	(360.0)				
Transport	(35.0)				
Handling	(2.0)				
Finance costs					
Total wholesaler costs	(397.0)				
Price to Retail shop	550.0	153	39%	1	462%

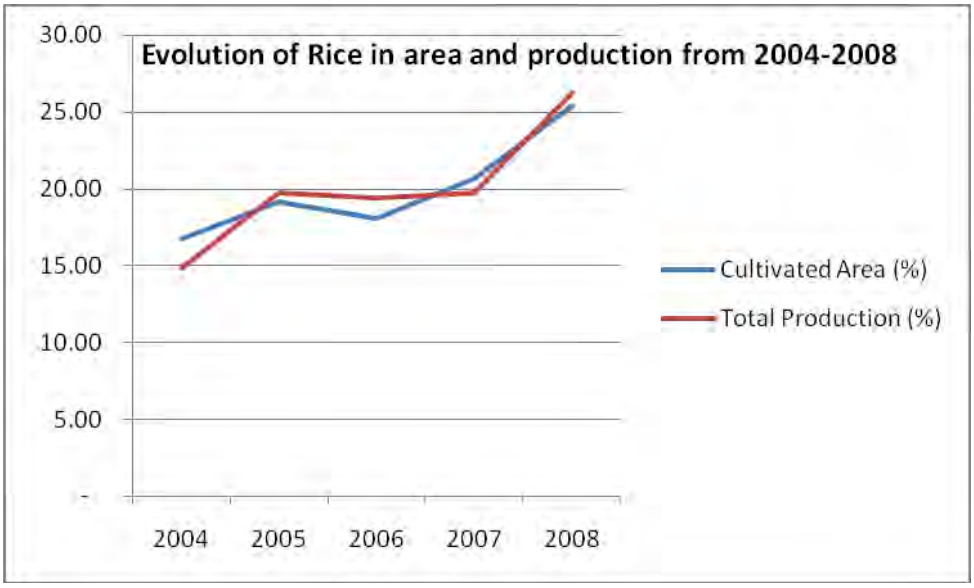
Source: Inspired International; a study done on value chain on Rwanda

Table 9: Rice production between 2004-08

Year	Cultivated Area (Ha)	Total Production (t)
2004	12167	46190
2005	13922	61594
2006	13124	60446
2007	15005	61701
2008	18455	82024

Source: Ministry of Agriculture, Rwanda

Graph 3: Evolution of Rice in area and production 2004 – 2008



Source: Ministry of Agriculture, Rwanda

The above graph shows that rice production in Rwanda is increasing every season due to the policy of increasing marshlands for rice cultivation and a demand of processed rice has been increasing. However, the processing facilities are still inadequate.

Table 10: Analysis of import –export- production of rice in Rwanda

Period	Imports (MT)	Exports(MT)	Production(MT)
2004	13280467	0	46,190
2005	13,280,467	0	61,594
2006	16662453	92,000	60,446
2007	22,887,354	0	61,701
2008	17,923,729	12,186	82,024

Source: Ministry of Agriculture, Rwanda

A calculation from the above table shows that 99.46% represents imports of the total rice consumed in Rwanda. While 0.53 % only is produced in marshlands of Rwanda – a small quantity of rice is produced in Bugarama, South Western Province of Rwanda and about 0.18% is sold to Burundi across the border of RUSIZI River south. This implies that without importation, local production alone cannot cover the national demand for rice.

4.2.1. Chain of rice importation in Rwanda

According to rice traders and Rwanda Revenue Authority Statistics, large quantities of rice are imported from Pakistan, Vietnam, Tanzania and Thailand respectively according to the quantity of rice found on the Rwandan market. Again, the imported rice is highly appreciated because it meets the consumer taste and preferences however the majority of Rwandans have come to appreciate the locally produced rice because of its low cost and affordability especially for the low income earners.

4.2.2 Analysis of rice production in Rwanda

Federation des Cooperatives Rizicole au Rwanda (FUCORIRWA) is a group of all cooperatives cultivating rice in marshlands of Rwanda (UCORIBU, UCORIKI, UCORIVAM, UCORIGI, UCOPRIBU and Union TWIBUMBE). This union is based in Kigali and has a mandate of defending interests of its members. This union does not look for the market of rice produced by its members but helps them to be organized in cooperatives and buys inputs at moderate price like chemical manures, seeds, and training for technical cultivation.

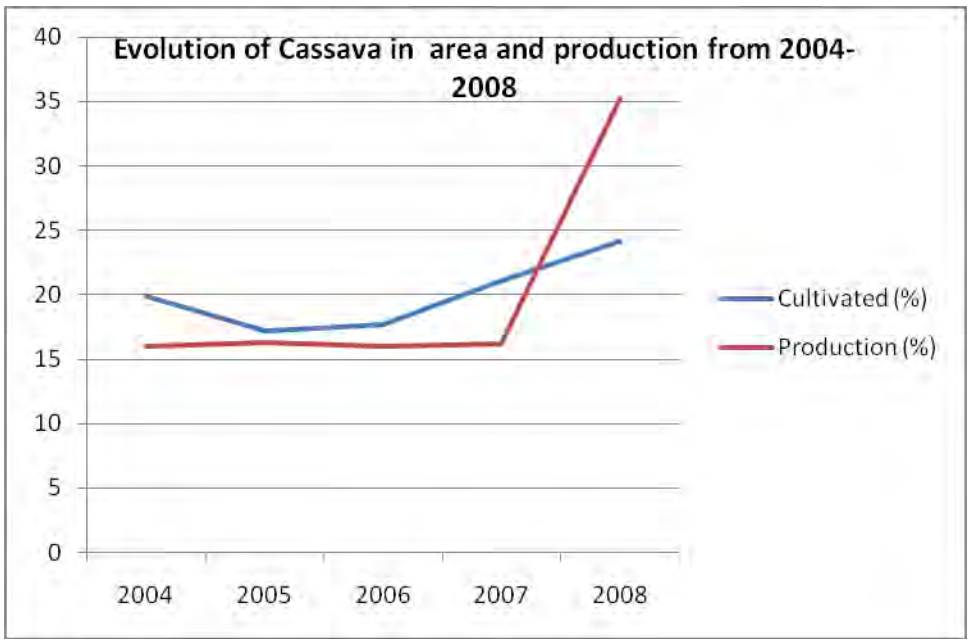
The rice of Rwanda is sold to independent traders either at paddy field or at cooperative level, mainly consumed in schools. There is no chain organized for rice commercialization because of its low level of production.

4.3 CASSAVA

Table 11: Cassava Production by Year

Year	Cultivated Area (Ha)	Total Production (t)
2004	133,876	765,748
2005	115,694	781,637
2006	118,860	765,199
2007	142,000	776,944
2008	163,099	1,681,823

Graph 4: Evolution of Cassava in area and production from 2004 – 2008

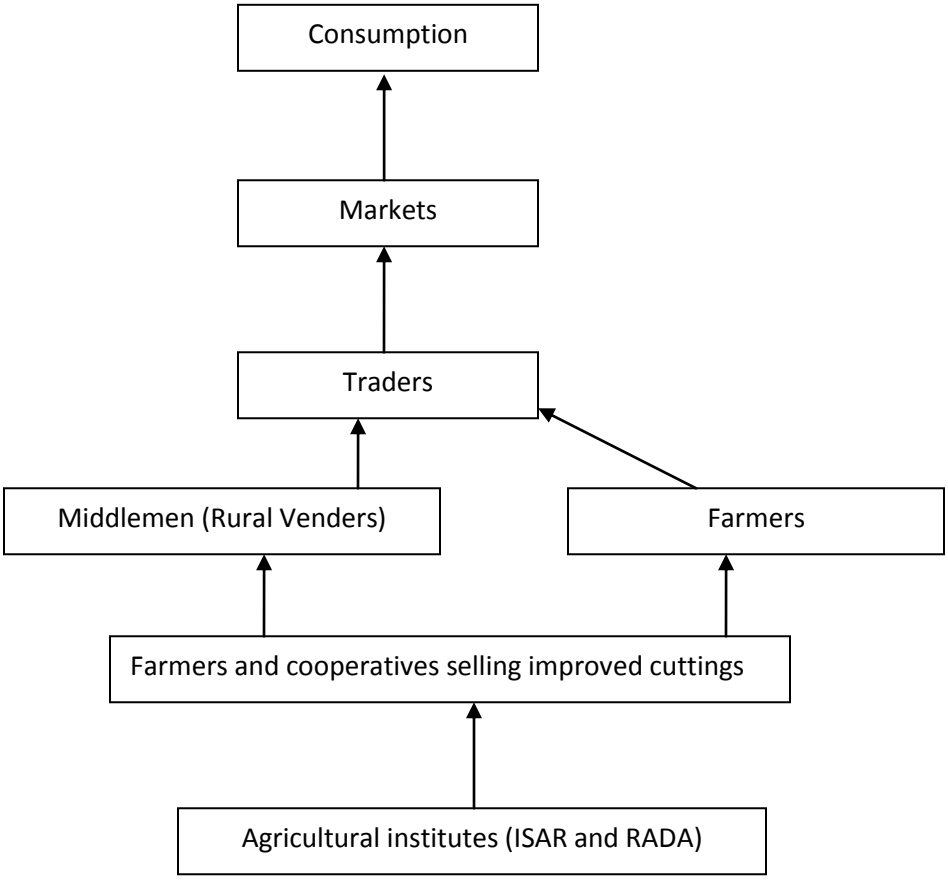


Source: Ministry of Agriculture, Rwanda

In 2009, the estimated production of fresh cassava crop is around 1.7 million tons. The major zones that have high cassava production potential are located in the eastern and southern provinces of the country.

4.3.1. Chain analysis of CASSAVA in Rwanda

Figure 2: Value Chain Analysis of Cassava in Rwanda



The figure above shows that cassava is produced mainly for the local market. In the low season 200 to 300 kilograms can flow to the market per day, while during the peak season this quantity can be increased up to 500 kg/day. The price varies according to the period; in strong period of harvest (June- September), the price is at 120 Rfw/Kg for dried cassava, but in December and in March, the price increases to 200 Rfw/kg because of the rainy period. It is difficult to dry the product which makes it rare on markets.

Producers

Usually producers of cassava sell part of their cassava to traders or farmers with food shortages. The amount sold varies by the size of cassava fields, amount harvested, and food requirement of household (quantities of cereals and potatoes). They sell cassava throughout the year depending on the household's cash needs and the availability of buyers and they sell individually in various

forms including fresh cassava (unpeeled roots) per ridge or acre, dried cassava per tin or sack, flour per kg or tin. Selling is done at home (farm gate) or at the village-open markets to vendors or small traders and some times to large traders. In some places cassava can be sold in the field per unit plot or unit bed by those households with labour shortage for harvesting and peeling the roots. Usually producers have no access to marketing information on prices and transportation except where farmers are organized in cooperatives like INGABO in the District of Muhanga. In the period of 2006, the shortage in cassava production motivated many to be in a group and increase the power of negotiation.

Rural vendors

According to ISAR post harvest management unit working at MULINDI in the District of Kicukiro, the rural vendors operate on individual basis like farmers. Rural vendors could be cassava growers too. Rural vendors buy fresh or dried cassava direct from farmers while urban vendors usually buy from wholesalers or big traders. They are limited by capital and processing technologies (food preparation methods).

Small traders

A rural small trader could be also involved in cassava production. They buy mainly dried cassava directly from farmers. Also, they involve in buying other crops such as sweet potatoes, maize and rice. They buy in tins or bags but sell in kg in urban markets. They do some cleaning of the produce and packing in bags. Sources of capital are mainly from their own saving or friends or savings and credit companies. They have limited information on production and marketing of cassava. Their major information sources are established media (radios and newspapers), from friends, customers and their own observations. They can identify markets before buying the produce by asking the big traders.

Big Traders

These traders are mainly located at Nyabugogo in Kigali city. They can acquire export licenses for crops to export outside the country. They can have informal arrangements with small traders in the collection of cassava. They buy cassava mainly from small traders and sometimes directly from farmers. They buy large quantity of cassava ranging from 14 to 16 tons per month. They mainly sell (retail and wholesale) to ultimate urban retailers through a broker or commission agent. They have no any arrangement with producers, retailers or vendors. Somehow they access to production and marketing information in the country through telephones, faxes, e-mails and internet. They have their own transport or hire trucks (FUSO and DINA). They are involved in other trading businesses including buying produce of other crops such as maize, rice, beans, and at times could make exchanges with foreign traders who bring maize and wheat from UGANDA and Tanzania.

Industrial Processors

They are either individual traders or companies mainly engaged in food and/or animal feeds processing industries. At present, they have limited technologies on using cassava products as their raw materials in producing products. However, some of them with moderate capacity are adding value through transformation processes and are exporting to the European markets (France and Belgium), and these include; SHEKINA, NYIRANGARAMA and COVEPAR (HUYE IN SOUTHERN PROVINCE).

Retailers

There are both urban and rural retailers involved in selling fresh and /or dried cassava. Their selling points are at town markets and at village centers. Rural retailers can buy cassava from farmers or/and from those involved in cassava production. Urban retailers can buy cassava from small/large traders or directly from farmers.

4.3.2 Situation of cassava stocking at processors' level

Apart from installed small grinding mills at household level, there are three industrialized units of transformation of cassava; Agriculture Institute of Research in Rwanda has one near Kigali City (Mulindi) and INGABO Association has another one in Kinazi, southern province (in Mayaga). A third unit of transformation is installed in HUYE (COVEPAR[2]). This unit of transformation produces only one tone of flour a day from the cool tubers. The cooperative really does not have stocking – transformation is done once the producers supply their products.

4.3.3 Situation of cassava transformation

In Rwanda, the sector of cassava processing is less developed. Until now, the artisanal methods are being used by families or by dealers using hands.

Three systems of transformation exist at the level of the country in Rwanda:

- A transformation accomplished at the level of the producer and which is manually made.
- It requires numerous manipulations, aiming at eliminating cyanhydric acid, which is very dangerous for health. After transformation of tubers in cossettes, quantities intended are put on the markets. Quantities intended for family consumption are progressively transformed into flour in a traditional manner in mortar and in pestle.
- A transformation accomplished at the level of the dealers who use grinding machines and transform into flour. The flour deteriorates very quickly – transformation must be performed according to request.
- The transformation accomplished by the three industrialized production units among which two are still at experimental level – that of ISAR near Kigali (in Mulindi) and that from INGABO Association at Kinazi (in Mayaga).

[2] Coopérative de Valorisation des Produits Agricoles Rwandais

The third unit is that of COVEPAR. COVEPAR is a cooperative of transforming and selling of cassava created in 2001 and funded by PEARL[3]. It also tries to commercialize the chili. For manioc, it works with 330 producers regrouped in 20 associations which produce 15 hectares of cassava in total. It buys fresh manioc from the members at 55-60 Frw / kg and since 2007, it also buys from producers non-members at the rate of 8 tones / week. In 2006, it bought about 375 tones of fresh roots from its members. To ensure good supply, it helped the producers to use new varieties that are resistant to mosaic disease. It transforms roots in *cossettes* then into flour. It has also started packaging and exporting the product on the French market.

Its capacity is small; 1 tons of flour / day, but has just installed a new transformation unit with the capacity of 4t / day financed by ACDI-VOCA.

4.3.4 Constraints related to cassava production and trading in Rwanda

- The product manioc is very perishable under all its forms: fresh tubers, cossettes and flour and its time of stocking is subject to limitations;
- No research was performed to find resolutions in the stocking of the transformed products;
- Cossettes transformed by the producers is not good qualities because this transformation is made without standardized norms;
- There is weak use of technologies appropriated as conservation and transformation
- Except artisanal and small grinding at household levels transformation, there is not investment in industrial transformation;
- The perishable nature of cassava makes the producers transform only what is intended for quick sale. This situation makes the producers transform even in humid period

[3] The Partnership for Enhancing Agriculture in Rwanda through Linkages

4.4 WHEAT

4.4.1 Wheat Value **Chain**

Wheat value chain map

low input Byumba 20 Area, 300 kg/Ha, milling by Pemba

Table 12: Wheat Production

Category of transaction	Value (Rwf/Ha	Value Added RWF/Kg	Value Added RWF/Kg	Return on Investment	Months	Annual return on investment
1. Input retail						
Seed	(80.00)	(53.30)				
NPK fertilizer	(160.00)	(106.70)				
Herbicides						
Financing costs						
Total costs of inputs		**(160.00)**				
Input prices		**200**	**40**	**25%**	**4**	**75%**
2. Production						
purchased inputs	(300,000.0)	(200.00)				
field preparation	(12,000.0)	(8.00)				
Planting	(40,000.0)	(26.70)				
Weeding	(14,000.0)	(9.30)				
Harvesting	(30,000.0)	(20.00)				
Packing	(3,000.0)	(2.00)				
Winnowing	(10,000.0)	(6.70)				
Total costs of production	(589,000.0)	(392.70)				
Farmgate price	300,000.0	200.00	(192.70)	(49.00)	4.00	(147.00)
3. Milling						
Cost of wheat		(240.00)				
Milling costs per kg of out turn		n/a				
Milling loss		(24.00)				
Cost of finance to be determined						
Total milling costs		(264.00)				
Millgate price		602	338	128%	4	384.10%

Wheat value chain map-high input

Byumba 2 Ha, 3,200 kg/Ha

Category of transaction	Value (Rwf/Ha	Value Added RWF/Kg	Value Added RWF/Kg	Return on Investment	Months	Annual return on investment
1. Production						
Purchased inputs						
Seed	(37,500.0)	(11.7)				
NPK fertiliser	(200,000.0)	(62.5)				
Herbicides	(6,000.0)	(1.9)				
Field preparations	(10,000.0)	(3.1)				
Seed broadcasting	(300.0)	(0.1)				
Harvesting	(24,000.0)	(7.5)				
Winnowing	(3,000.0)	(0.9)				
Financing costs						
Total costs of production	(280,800.0)	(87.8)				
Farmgate price	n/a	n/a	n/a			
2. Milling & Marketing						
Cost of cereal /grain	(280,800.0)	(67.8)				
Milling loss	(14,040.0)	(4.4)				
Milling costs per kg of out turn	(48,000.0)	(15.0)				
Transport per kg delivered to Kigali	(280,000.0)	(87.5)				
Total milling costs	(622,840.0)	(194.6)				
Selling price Kigali	1,120,000.0	(360.0)	166.4	79.80%	4	239.50%

Source: Inspired International; a study done on value chain on Rwanda

4.4.2 The organization of commercialization of Wheat in Rwanda

Two circuits were identified for wheat in Rwanda; the circuit of national production and the circuit of importation.

The circuit of national production

The marketing of the local wheat is made by two big types of circuits:

- Circuit artisanal grinding mills at household level
- Circuit industrial transformation.

The producer

The producer is the first link of the chain of marketing. Sale starts with its decision to sale. The first sale is made at the time of the crop in the field. If the producer belongs to a cooperative, he can decide to sell through this structure. However a lot of sales are made without the intermediary cooperative structures.

The sale intended for the circuit of artisanal transformation

The producer sells in general to a collector on the small upcountry markets. He can also bring his produce directly to the wholesaler of the big city.

The sale intended for the circuit of industrial processing

In this situation, the producer belongs in general to a grouping or a cooperative which took commitments (contract) with a flour mill. The producer brings his product therefore to the cooperative which contacts the flour mill then route the product at the plant unit.

Sale by means of cooperatives

The production of wheat is well organized in cooperatives and this plays an important role in the marketing of the wheat produced by the members. But the part of wheat commercialized through producers' associations remains weak because they often have no medium financiers to buy the product, nor the necessary capacities of drying and stocking. Moreover, they often lack competences in negotiations with the purchaser as well as other competences and management.

The dealers

For the dealers, wholesalers, the wheat in practice has never been the main product of their trade. It is often the minority among the products sold after beans and sorghum which remain both the common products in exchanges. There are however certain dealers whose wheat constitutes one of the main products (100 tone / year purchase).

The most part of the dealers declare that production is very weak. This confirms that the wheat is sold in small quantities by the producers to provide the periodical financial needs of the family. The most part of the wheat dealers buy from independent collectors.

The wholesaler sells retail or to small retailers or directly to the consumer. It seems that the most part of these purchases to the dealer are made in grain and the product is transformed by a traditional miller because the flour is not wary for a long time: 1 week in 15 days. The customers are not only families but also bakers.

The Processors

Processors buy the wheat in most cases from groupings and from cooperatives. However a certain number of wholesalers also sell them some wheat. Purchases in groupings are in general made via a written or verbal contract and price is often fixed at the beginning of the crop. At the time of sale, the prices of inputs are deducted if the flour mill provided with it. For the purchase to the dealers, price is that of the market.

The circuit of importation

The importation of the wheat is only made either **in flour or in grain form**. The importation of wheat flour comes from mainly 2 neighboring countries: Dar are Salam in Tanzania with 80 % of quantities supplied by mainly AZAM and 20% from Kampala Uganda. The flour of 1st quality comes from Tanzania and is intended for the bakery, while the flour of 2nd quality comes from Uganda and is intended for the manufacture of doughnuts. There are several importers in Kigali and so far PEMBE the only wheat milling company in Rwanda cannot satisfy the market.

Stocking at the level of the processors

Today 3 flour mills in the country have warehouses especially constructed for the stocking of the wheat. Their capacity of stocking is presented below:

Table 13: Wheat Processing Capacity

SOTIRU	3 000 Tones
MINOTERIE DE NYUGWE	1 000- 1 200 tones
PEMBE FLOUR MILLS (BYUMBA)	5 000 tones

4.4.3 Description of wheat processing in Rwanda

Processing at the level of the producer

Wheat requires a certain transformation at the level of the producer. These are the activities of post crop. The crop is made in *épis* and these must be beaten so that grains are separated from épis. This job is manually done in most cases. It is a long and tiring job. There is however some threshing machines but not enough. The wheat is therefore harvested in humid form and must be dried. This process poses some problems to the producer that sometimes cost him. The wheat is therefore often dried in poor conditions which do not make easier its conservation.

Industrial processing

In Rwanda, there are 3 industries that transform Wheat: Flour mill of Nyungwe (southern province) SOTIRU and PEMBE flour mills both in northern province.

Table 14: Wheat Processing Firms

Wheat	**Capacity(tons/year)**
Nyungwe	5000
SOTIRU	15000
Minoterie	66000

SOTIRU

SOTIRU is an old Rwanda-Belgian firm (ETIRU), closed in 1995 then sold in 2001 to a group of Rwandan investors.

Its source of raw materials

Local supply does not exceed 20 % because the cultivated varieties, particularly Musama which is the most produced

SOTIRU actually processes only 3 000 tones / year. It uses therefore only 20 % of its capacity.

Four products come from this transformation, including Wheat n°1 intended for the manufacture of bread.

Table 15: Products from processing in SOTIRU

Product	Rate of transformation (%)
Flour n°1 the categories of wheat flour normal according to proportion in mixing of imported wheat and local wheat).	76%
Flour n°2 (porridge)	4%
Flour n°3 (low animals)	11.5%
Flour n°4 (for animals)	7%
Loss	1-1.5%

The flour mill of Nyungwe

The flour mill of Gatare was privatized in 2001.

In 2009, the flour mill finally is producing at 20% of its capacity. The factory aims at producing at least at 80 % of its capacity by 2010.

Table 16: Products of the wheat in the flour mill of Nyungwe

Product	Rate of transformation (%)
Flour for bakery	65%
Flour for porridge	20%
Son de blé for stock	10%
Loss – impurities	5%

Source : Nyungwe flour

The flour mill of Byumba

The PEMBE flour mills of Byumba has just been bought by a Kenyan society PEMBE which already has several flour mills in the sub-region: 7 in Kenya, 1 in Tanzania and 1 in Uganda.

Supplies to the Factory

PEMBE flour mill processes only imported wheat these days. The wheat processed is mainly from Russia. They are trying to encourage local supplies but they only envisage 20%.

Capacity of transformation

The flour mill has a capacity of 200 tons / day that is 66 000 tons a year.

Company Sales

With the capacity of transformation of the plant, the owner plans to provide Rwanda and two other bordering countries: Burundi and Congo.

Artisanal transformation

It appears that the market of the local wheat is restricted to the zones of production. The mills are mainly in areas of production and the provincial headquarters, the factories are well equipped. These mills are polyvalent and allow the transformation into flour of wheat, sorghum and corn. These mills belong either to dealers or to artisans who work on request. The expense of transformation is between 20 and 30 Frw / kg.

The customers of this product are the families which use the flour for porridge (especially in the zone of Gikongoro) and doughnuts, and especially bakers who blend the flour of local wheat with the flour of imported wheat.

Key Constraints facing Wheat production and supply

- The product put on the market is of low quality ;
- Cooperatives lack negotiation skills and management;
- Limited financing;
- Means of transport in rural areas are restricted to the bike and on the head, which in turn, restricts the possibility of transporting big quantities;
- There is lack of uninterrupted and dependable data on the prices of the important markets of the country; the producers and cooperatives are not well informed at the time of sale;
- As they said it before, local production is weak compared to the demand.

4.5. BEANS, SORGHUM AND GROUNDNUTS

There is no specific chain for these products, but their marketing is dependent on certain seasons. However, much of the groundnuts on the Rwandan market is imported from Tanzania. While Beans are produced in Rwanda and Uganda, Sorghum, sometimes is from D R Congo depending on the season.

4.5.1 Constraints for cassava and maize

Constraints – Cassava

- The product cassava is very perishable under all its forms: fresh tubers, cossettes and flour and its time of stocking is limited;
- No research was performed to find resolutions in the stocking of the transformed products;
- Cossettes transformed by the producers are not of good quality because the transformation is made without standardized norms;
- There is a weak use of appropriate technologies for conservation and transformation;
- Except artisanal and small grinding at household levels transformation, there is not investment in industrial transformation;
- The perishable nature of cassava makes the producers transform only what is intended for quick sale. This situation makes the producers transform even in humid period.

Constraints – Maize

- Under-utility of the existing capacity of storage facilities because of the lack of products to be stocked. Mostly, stores are empty;
- Lack of training of cooperatives and dealers on the techniques of stocking;
- The obligation of the stocking for the producers instituted by the Eastern Province is in double sharp side: it allows ensuring better the food security of families but moreover, it interferes in the decision of the producers and does not allow them to regulate their financial needs;

Table 17: Trend of food production per hectares in Rwanda

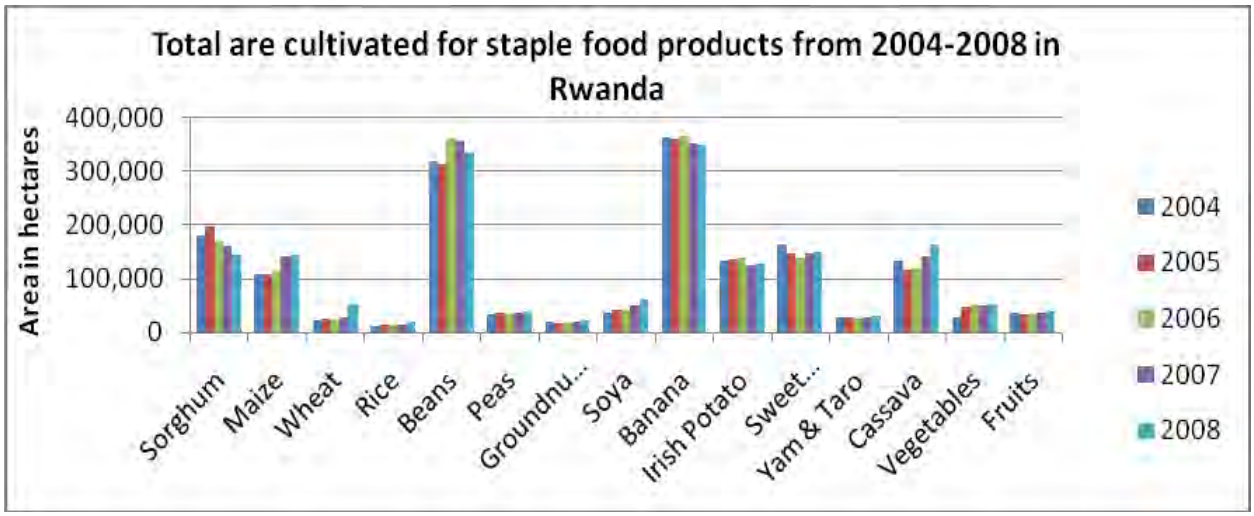
Crops	2006	2007	2008	2009A	% 08A/09A
Total Sorghum Production (tons)	187,380	166,769	144,418	20,178	59.92%
Total Sorghum Area (ha)	170,298	162,322	143,210	13,551	27.62%
Average Sorghum Yield (kg/ha)	954	1,079	1,058	1,233	9.49%
Total Maize Production (tons)	96,662	102,447	166,853	216,604	62.87%
Total Maize Area (ha)	113,312	141,168	144,896	102,415	0.94%
Average Maize Yield (kg/ha)	767	714	916	1,797	61.27%
Total Wheat Production (tons)	18,978	24,633	67,869	38,314	1.07%
Total Wheat Area (ha)	22,084	27,528	52,336	17,566	-17.00%
Average Wheat Yield (kg/ha)	565	455	925	2,208	54.43%
Total Rice Production (tons)	60,446	61,701	82,025	48,353	0.62%
Total Rice Area (ha)	13,123	15,005	18,455	12,422	11.63%
Average Rice Yield (kg/ha)	3,856	3,671	3,354	4,479	18.14%
Total Cereals Production (tons)	363,465	355,550	461,163	323,449	39.68%
Total Cereal Area (ha)	318,818	346,023	358,897	145,953	1.10%
Average Cereal Yield (kg/ha)	1,536	1,480	1,563	2,429	30.23%
Total Beans Production (tons)	296,724	331,107	308,563	186,876	3.12%
Total Beans Area (ha)	360,318	358,208	336,577	179,999	-1.40%
Average Beans Yield (kg/ha)	844	911	910	1,019	3.14%
Total Peas Production (tons)	17,643	19,656	21,689	16,149	34.83%
Total Peas Area (ha)	32,029	36,850	38,728	22,345	6.39%
Average Peas Yield (kg/ha)	501	452	459	578	25.05%
Total Peanut Production (tons)	9,021	9,899	11,122	5,950	0.00%
Total Peanut Area (ha)	16,197	19,482	20,898	10,533	0.00%
Average Peanut Yield (kg/ha)	468	510	521	524	0.00%
Total Soya Production (tons)	28,778	39,819	50,931	32,410	0.00%
Total Soya Area (ha)	42,364	50,238	61,748	38,982	0.00%
Average Soya Yield (kg/ha)	697	768	805	829	0.00%
Total Legumes Production (tons)	352,166	400,482	392,305	241,385	4.24%
Total Legumes Area (ha)	450,907	464,778	457,951	251,860	-0.48%
Average Legumes Yield (kg/ha)	627	660	674	738	5.24%
Total Banana Production (tons)	2,658,232	2,698,176	2,603,949	1,650,874	26.17%
Total Banana Area (ha)	366,296	353,945	348,717	176,755	-0.52%
Average Banana Yield (kg/ha)	6,975	7,254	7,022	8,639	24.47%
Total Potato Production (tons)	1,275,585	967,283	1,161,943	687,978	26.17%
Total Potato Area (ha)	139,043	124,621	127,226	69,352	0.73%
Average Potato Yield (kg/ha)	6,851	6,150	6,358	6,533	7.99%
Total Sweet Potato Production (tons)	776,640	845,133	826,440	332,126	20.10%

Total Sweet Potato Area (ha)	138,353	147,563	149,724	57,731	9.00%
Crops	**2006**	**2007**	**2008**	**2009A**	**% 08A/09A**
Total Yam & Colocasse Production (tons)	129,275	151,513	144,919	76,560	15.40%
Total Yam & Colocasse Area (ha)	26,164	28,530	31,633	17,945	0.01%
Total Yam & Colocasse Yield (kg/ha)	5,073	4,898	4,963	4,986	0.00%
Total Cassava Production (tons)	765,198	776,943	1,681,823	817,837	18.88%
Total Cassava Area (ha)	118,860	142,881	163,099	83,514	5.80%
Total Cassava Yield (kg/ha)	6,191	5,424	11,863	13,974	12.46%
Total Tubers Production (tons)	2,946,699	2,740,872	3,815,126	1,914,501	17.80%
Total Tubers Area (ha)	788,716	797,540	820,398	228,543	4.51%
Total Tubers Yield (kg/ha)	5,965	5,528	7,169	7,831	8.52%
Total Fruit and Vegetable Production (tons)	846,004	903,432	961,645	510,991	3.35%
Total Fruit and Vegetable Area (ha)	83,446	84,481	89,823	50,587	3.67%
Total Fruit and Vegetable Yield (kg/ha)	10,097	10,628	10,629	10,172	0.00%
Total Production (tons)	7,166,567	7,098,512	8,234,188	4,641,200	19.27%
Total Area (ha)	1,600,164	1,650,582	1,682,158	853,697	1.32%

Source: MINAGRI

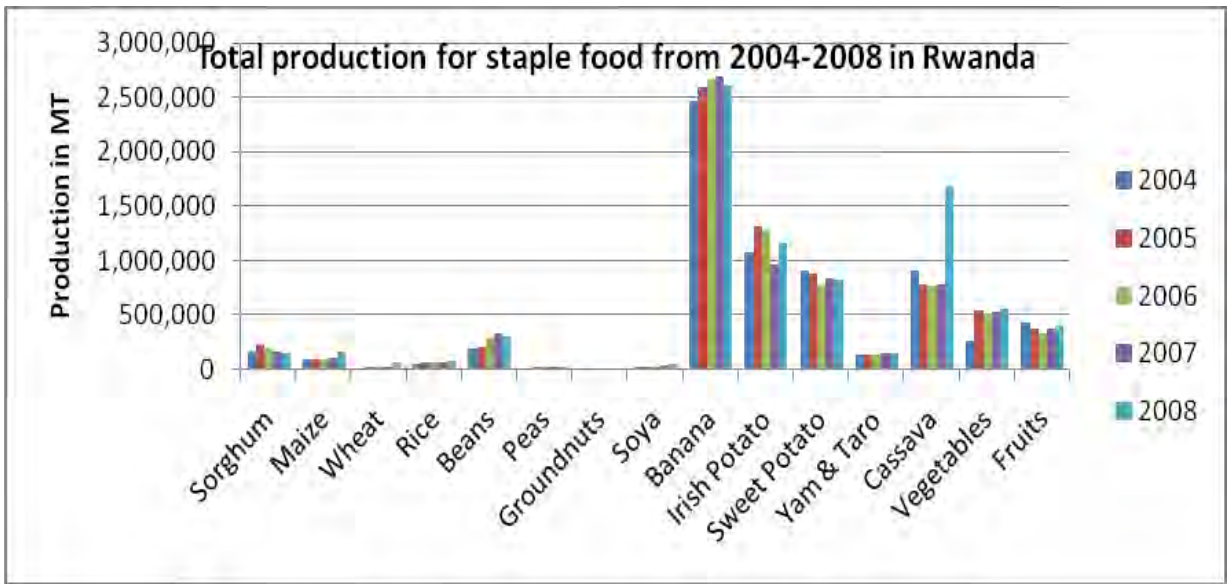
The Graphs below shows trends of staple foods production and gaps in import –export of staple food products in Rwanda

Graph 5: Cultivated area for staple foods from 2004 - 2008

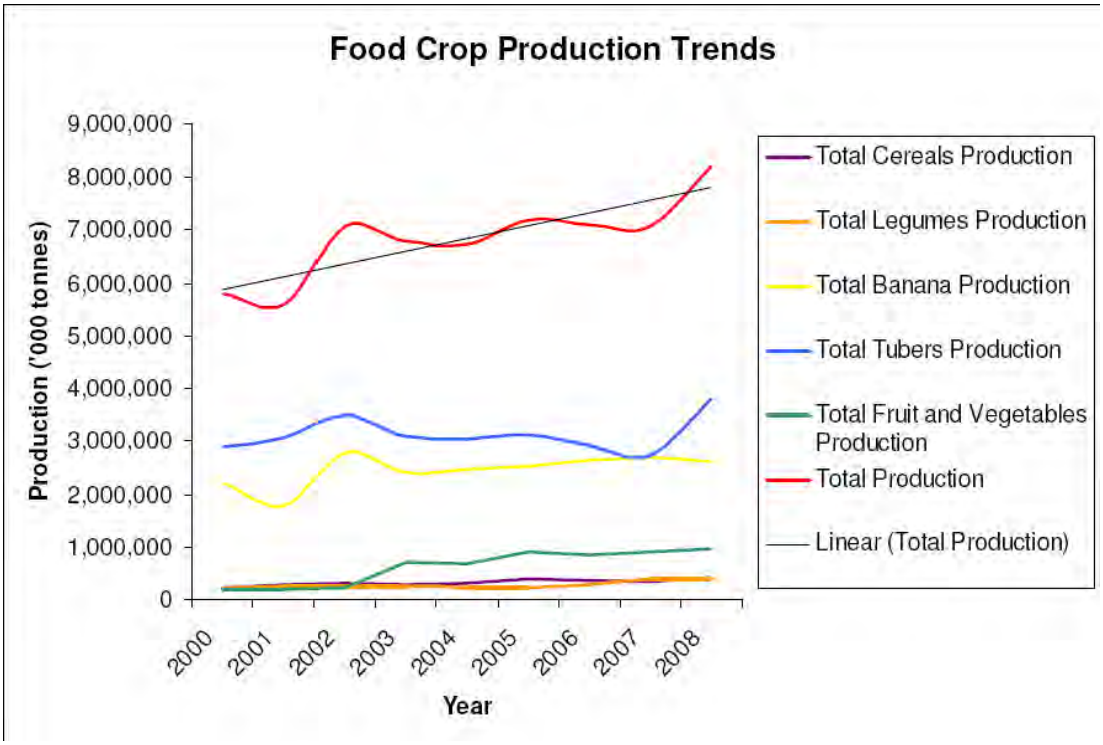


Source: Ministry of Agriculture, Rwanda

Graph 6: Total production for staple foods from 2004 - 2008

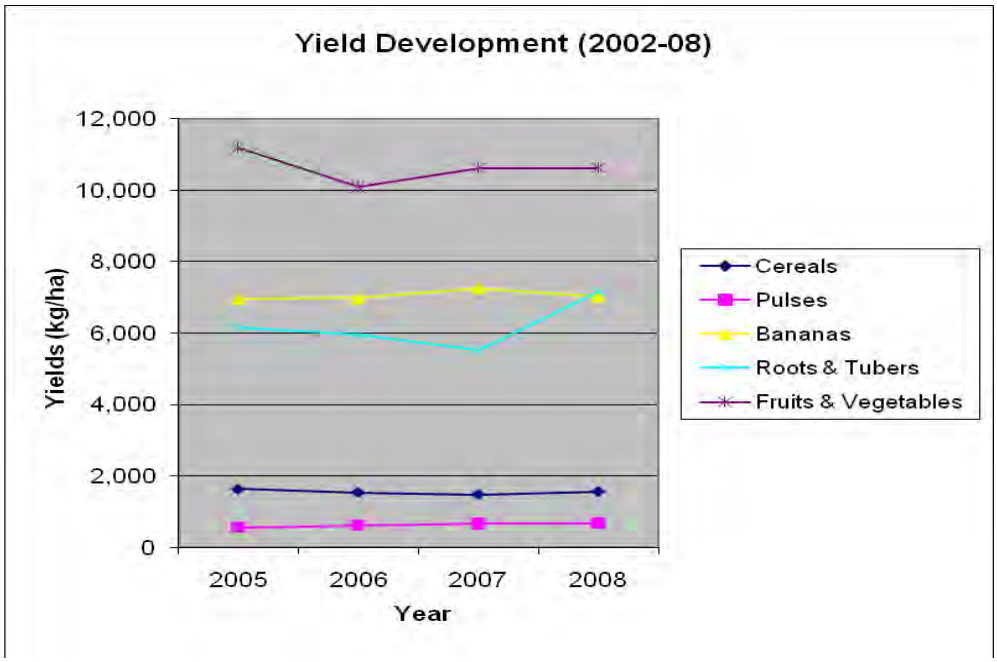


Graph 7: Crop Production Performance from 2000 - 2008



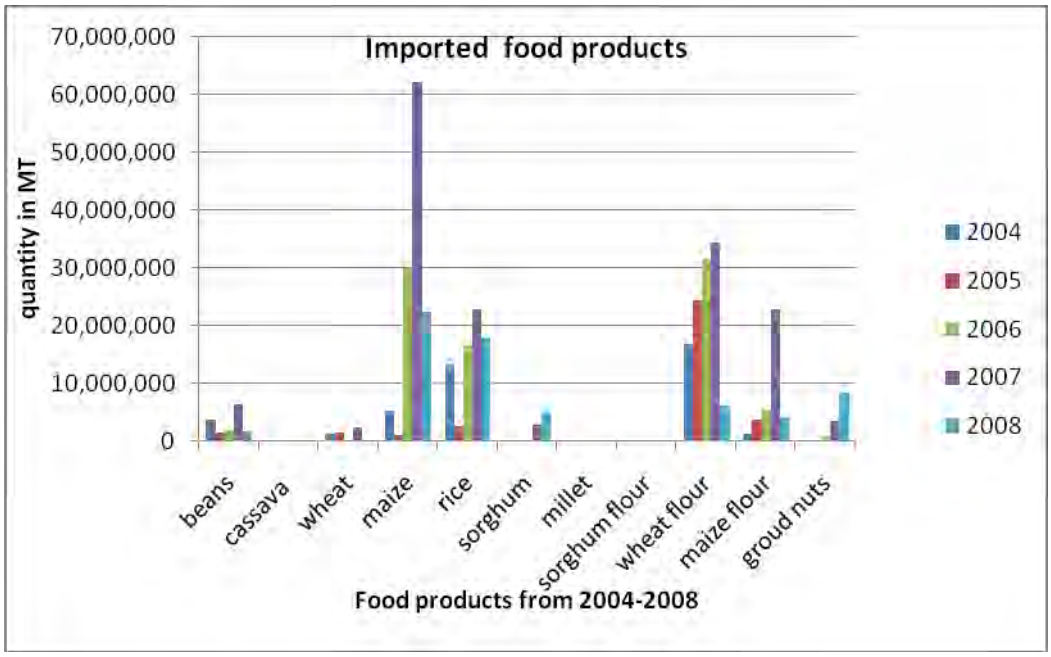
Source: Ministry of Agriculture, Rwanda

Graph 8: Yield development 2002-2008



Both seasons 2008A and 2008B saw substantial improvements in yields, which can be attributed to a number of factors. The first of these is a near doubling of cassava production, as a result of MINAGRI's cassava promotion activities and measures taken in combating cassava mosaic disease. Secondly, the Crop Intensification Programme succeeded in increasing wheat production by 31% from just 24,195 MT in 2007 to 67,868 MT the following year, while roots and tuber production increased by 39% from 2,738,133 to 3,815,126 MT in 2008. The percentage change in root and tuber yields are particularly significant as, along with bananas, these are the most widely grown crops. These increases more than offset minor reductions in sorghum (-12.8%), bean (-4.5%), sweet potatoes (-1.2%) and banana (-6.1%) production.

Graph 9: Staple Food Imports 2004 - 2008



A comparison of the two above graphs shows a general picture of exchange for food products and how Rwanda is depending on imports. The above analysis shows importance of imports in food consumption in Rwanda – the percentage change in production is still negative for some of the products.

Table 18: Crop Intensification Program Data 2008 – 2009

Crops	Total Area cultivated	CIP Area 2008 A	CIP 2009 A	National projected harvest with CIP 2009 A	National projected harvest out of CIP 2009 A	Total Projected harvest 2009 A
Maize	101,458	17,808	36,933	172,915	53,022	225,937
Wheat	21,164	600	3,456	13,824	861	14,685
Irish Potatoes	68,846	160	34,523	516,345	227,984	744,329
Rice	11,128		11,128	77,896	-	77,896
Cassava	78,945	5,000	15,787	394,675	491,180	885,855
Beans	182,554		18,255	36,510	134,561	171,071
Soya Beans	38,981		15,592	31,184	15,717	46,901
Total	503,076	23,568	135,674	1,243,349	923,325	2,166,674
%ge	100%	5%	29%	57%	43%	100%

Source: MINAGRI; Crop Intensification Programme (CIP)

The Enabling Environment for Trade in Agricultural Commodities

The Rwandan government provides excellent business environment for entrepreneurs willing to invest or trade in any of the staple food products. There is no sector that is barred from investing in any sector; rather the government provides fiscal and non –fiscal incentives to the interested players in the sector.

The prices for the agricultural products are determined by the forces of supply and demand and but the government requires that traders publish the prices so as not to overexploit the buyers.

The Rwanda Agricultural Development Authority (RADA) also publishes on a quarterly basis the prices of the various in-puts. For example the table below indicates the new prices for basic certified and declared seed.

Table 19: Variation of Input Prices for Staple Food Products

CROP	BASIC(FRW/ KG	CERTIFIED(FRW/KG	DECLARED (FRW/KG
MAIZE	450	400	300
WHEAT	550	500	450
RICE	400	350	300
SORGUM	500	400	300
CLIMBING BEANS	600	500	400
FIELD BEANS	500	450	350
G.NUTS	1000	800	600
PEAS	800	700	600
POTATOES(SMALL	300	250	200
MEDIUM	250	200	150
BANANA IN VITRO	800		
BANANA SUCKER	300		
PINEAPLE (VITRO)	500		
SOYA	600	500	400
CASSAVA CUTTING	6 FRW		
Source : RADA	Current exchange rate 1$ 550 FRW		

The above table shows the variation of input prices for different staple food products and this variation is due to scarcity of the inputs such as G.nuts, peas, banana and climbing beans. These inputs are imported from the region that's why their prices are slightly higher.

5.0 TARIFF AND NON-TARIFF CHARGES

Since 2004, Rwanda has been an active member of the Common Market for Eastern and Southern Africa free trade area where products coming from FTA member states do not attract any duty and with effect from July 2009 Rwanda is implementing the East African Customs Union therefore there are no tariffs and no tariff barriers to import or export the agricultural products as longer as they meet the sanitary and phyto-sanitary requirements. However, there are some during the cross border trade like roadblocks, weigh bridges, corruption and too many procedures at borders.

Table 20: Current Tariffs for Staple Foods within the EAC.

Tariffs

Product	Import duty applicable on imports from:			
	EAC Countries	COMESA Countries	SADC Countries	Rest of the World (EAC CET)
Maize	**0%**	**0%**	**35%**	**35%**
Wheat	**0%**	**0%**	**35%**	**35%**
Rice	**0%**	**0%**	**35%**	**35%**
Sorghum	**0%**	**0%**	**25%**	**25%**
Millet	**0%**	**0%**	**25%**	**25%**
Beans	**0%**	**0%**	**25%**	**25%**
Pulses (Pigeon Pea, Cow pea and Chick pea)	**0%**	**0%**	**25%**	**25%**
Cassava	**0%**	**0%**	**25%**	**25%**
Groundnuts	**0%**	**0%**	**10%**	**10%**

Note: For COMESA, the principle of reciprocity is applied, i.e, 0% is applied on all COMESA FTA countries and for others, in accordance to their respective reduction levels.

Again, for SADC and the rest of the world, the CET is to be used to make sure the rates are used properly because some of the above items are considered as “SENSITIVE ITEMS”.

5.1. NON-TARIFF CHARGES

Rwanda government champions the removal of non-tariff barriers to trade therefore there is no specific fee charged as NTB, however the traders have been complaining about 0.2% charged on C&F by the Rwanda Bureau of standards.

5.2 REGIONAL STRUCTURED TRADING SYSTEM PLATFORM

5.3 THE FOOD BALANCE SHEET

Table 21: Food Balance Sheet 2008 ('000 MT)

	Jan-June 2008	June-Dec 2008
I. AVAILABILITY = 1 + 2 + 3	**941**	**1,104**
1. Stock	0	4
2. Crop production	1,162	1,281
3. Losses (20%)	-221	-181
II. NEEDS = 4	**1,121**	**1,156**
4. Consumption	1,121	1,156
III. Balance/Deficit = I-II	**-180**	**-52**
5. Imports	103	103
6. Food aid	26	36
IV. TOTAL = III + 5 + 6	**-51**	**88**

Source: MINAGRI, Policy, Planning and Capacity-Building Unit

From the table above one would observe that Rwanda has been in deficit in terms of food production hence importing from the region

Table 22: Rwanda Food Bala Sheet Trends

	2004A	2004B	2005A	2005B	2006A	2006B	2007A	2007B	2008A	2008B
I. AVAILABILITY =1+ 2+3+4	910	902	909	1,040	923	1,051	938	1,022	941	1104
1. Stock								0	0	4
2. Crop production							899	1,022	1,162	1,208
3. Animal production							38.4342			73
4. Losses (15%)								0	-221	(181)
II. NEEDS = 5	1,016	1,021	1,031	1,045	1,058	1,092	1,090	1,123	1,121	1,156
5. Consumption	1016	1021	1031	1045	1058	1092	1,090	1,123	1,121	1,156
III. Balance/Deficit = I-II	(106)	(119)	(122)	(5)	(135)	(41)	(152)	-101	-180	(52)
6. Imports	141	150	141	141	141	141		113	103	103
7. Food aid								28	26	36
IV. TOTAL = III + 6+7	35	31	19	136	6	100		40	-51	88

6.0 THE REGULATORY FRAMEWORK

6.1 CUSTOMS DOCUMENTS AND CLEARANCE PROCEDURES AND RELEASE TIME

Table 23: Customs Documents and Clearance Procedures

Documents Required to clear imports of staple foods	Procedure for Customs Clearance		
	Location where the documents are obtained from	Fee for accessing the documents	Traders concerns with fees and procedures
Certificate of Origin	Customs Office	6 USD	Exporters
Invoices			Exporters
Quality Assurance	Rwanda Bureau of Standards	0.2% of CIF Value	Exporters
Packaging certificate (volume)	RWANDAEXPORT (RWANDEX)	Depending on volume of products	Exporters

6.2 STANDARDS

6.2.1 The currents standards applied in the staple food production

The Rwanda Bureau of standards charges 0.2% on the cost and freight as a fee for inspection services. Summary of requirements as per Rwanda Bureau of Standards, EAC and COMESA for the following products; RS 24: 2004 Sorghum grains- Specification

Table 24: Grades and grade requirements for sorghum grains

Grading factors	**Grade* and grade requirement, % by mass, max**		
	1	**2**	**3**
Damaged kernels (total)	2.0	5.0	10.0
Heat damaged (part of total)	0.2	0.5	1.0
Pest damaged (part of total)	2.0	3.0	4.0
Diseased grains (part of total)	1.0	2.0	3.0
Broken kernels	3.0	4.0	5.0
Foreign matter (total)	2.0	3.0	4.0
Inorganic matter (part of total)	0.1	0.3	0.5
Filth	0.1	0.1	0.1

* sub grade sorghum is sorghum that

a) Does not meet the requirements for the grades 1, 2, or 3
b) Has musty, sour, or commercially objectionable foreign odour; or
c) Has smutty odour or has smutty appearance or contains 20 or more smut balls per 100 gram sample
d) Is badly weathered, heat damaged or distinctly of low quality

6.3 LABELLING

In addition to the requirements of RS-CODEX STAN 1-1985 (Rev.1-1991), the following specific provisions shall apply:

6.3.1 Name of the Product

The name of the product to be shown on the label shall be "Sorghum grains."

6.3.2 Country of origin

Sorghum packages shall bear the country of origin of the sorghum.

6.3.3 Labeling of Non-Retail Containers

Information for non-retail containers shall either be given on the container or in accompanying documents, except that the name of the product, lot identification and the name and address of the manufacturer or packer shall appear on the container.

However, lot identification and the name as well as address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.

Table 25: RS 31:2004, whole wheat flour, compositional requirements for whole wheat flour

Characteristic	**Requirements**	**Method of Test**
i. Total ash content, % by mass, (on dry basis), and max.	2.5	RS ISO 2171:1980
ii. Acid insoluble ash, % by mass, (on dry basis), max.	0.10	RS 33: 2004
iii. Fat acidity, mg KOH per 100 g of flour, on dry matter basis, max	50	RS ISO 7305
iv. Protein (NX5.7) percent by mass (on dry basis), min	14	RS ISO 1871:1975
v. Crude fibre content, % by mass, max.	1.8	RS ISO 6541:1981
vi. Granularity, residue left on the sieve, % by mass, Max,.	0.5 200 µm sieve	RS 33: 2004
Vii. Moisture content, %, by mass, max.	14.0	RS ISO 712

Table 26: Microbiological limits for whole wheat flour

Micro-organisms	**Maximum limits**	**Method of test**
Total aerobic count, CFU/g	10^5	RS 15:2004
E. coli, CFU/g	<1	RS 15:2004
Salmonella in 10 g	Absent	RS 15:2004

Yeast and mould, CFU/g	10^4	ISO 7954

Packaging

Whole wheat flour shall be packaged in containers which shall safeguard the hygienic nutritional, technological, and organoleptic qualities of the product.

The containers, including packaging material, shall be made of substances which are safe and suitable for their intended use. They should not impart any toxic substance or undesirable odour or flavour to the product.

When the product is packaged in sacks, these must be clean, sturdy and sewn or sealed.

NOTE: Packaging in sacks is not efficient in maintaining the shelf life of the flour.

7. LABELLING

In additional to the requirements of RS CODEX STAN 1-1985, Rev.4-2005, the following provisions shall apply:

7.1 THE NAME OF THE FOOD

The name of the food to be declared on the label shall be '**Whole wheat flour**. In addition thereto, there shall be added any qualifying term required by national legislation in Rwanda.

The statement **'Human food** 'should appear on the package.

7.2 LABELLING OF NON- RETAIL CONTAINERS

Information for non – retail containers shall either be given on container or in accompanying documents, except that the name of the product, lot identification and the name of the address of the manufacturer or packer shall appear on the container.

Table 27: RS 28:2004; Whole Maize Meal –Specification, compositional requirements for whole maize meal

Characteristic	Level	Method of test
i. Crude ash content, % by mass, max	3.9	RS ISO 2171: 1980 or AOAC 923.03
ii. Protein content, % by mass, min. (Nx 6.25)	8	RS ISO 1871: 1975
iii. Crude fat content, % by mass. min.	3.1	AOAC 945.38F, 920.39C
iv. Crude fiber content, % by mass, max.	1.8	RS ISO 6541: 1981
v. Fat acidity, mg KOH per 100 g of flour, on dry basis, max	50	RS 33 :2004
vi. Acid insoluble ash, % by mass, max	0.35	RS 32: 2004
vii. Moisture content, % by mass, max.	14	RS ISO 6540

Heavy Metals	Maximum limits mg/kg (ppm)	Method of test
Copper	2	AOAC 971.20
Lead	0.1	AOAC 972.20
Arsenic	0.1	AOAC 952.13
Mercury	0.01	AOAC 971.21

Table 28: Microbiological Limits for whole maize meal

Microorganisms	Maximum limit	Method of test
Total aerobic count, CFU/g, max.	10^5	RS 15: 2004
E. coli, in 10 g	Negative	
Salmonella in 25 g	Negative	
Yeast and mould, CFU/g, max.	10^4	

Table 29: RS 25:2004; Maize Grains Specification (Maize Grades)

Defect	Maximum limits		Method of Test
	Grade 1	Grade 2	
Foreign matter, % m/m	0.5	1.0	ISO 605
Inorganic matter, % m/m	0.25	0.5	ISO 605
Broken grains, % m/m	2.0	4.0	Annex B
Live weevils in kg, max	3.0	3.0	ISO 605
Rotten & Diseased grains, % m/m	2.0	4.0	Annex B
Moisture Content% m/m	13.5	13.5	ISO 6540
Immature/Shriveled grains, % m/m	1.0	2.0	Annex B
Filth, % m/m	0.1	0.1	ISO 605
Aflatoxins in accordance with ISO 16050	10 ppb incl max 5 ppb B1	10 ppb incl max 5 ppb B1	
Total Defectives Grains, % m/m	4.0	5.0	
Reject maize that a) Does not meet the requirement for the grades Nos.1, 2, 3; or b) Contains 2 or more pieces of glass, 3 or more crotalaria seeds (*Crotalaria* spp.), 2 or more castor beans (*Ricinus communis* L.), 4 or more particles of an unknown foreign substance(s) or a commonly recognized harmful or toxic substance(s), 8 or more cockleburs (*Xanthium* spp.), or similar seeds singly or in combination, in 1,00 grams; or c) Has musty, sour, or commercially objectionable foreign odour; or d) Is heating or otherwise of distinctly low quality.			

Table 30: EAS 2:2005; Maize (grains) Specification

Defect	**Maximum limits**	
	Grade 1	**Grade 2**
Foreign matter, % m/m	0.5	1.0
Inorganic matter, % m/m	0.25	0.5
Broken grains, % m/m	2.0	4.0
Pest damaged grains, % m/m	1.0	3.0
Rotten & Diseased grains, % m/m	2.0	4.0
Discoloured grains, % m/m	0.5	1.0
Moisture, % m/m 13.5 13.5		
Immature/Shriveled grains, % m/m	1.0	2.0
Filth, % m/m	0.1	0.1
Aflatoxins in accordance with ISO 16050	10 ppb incl max 5 ppb B1	10 ppb incl max 5 ppb B1
Total Defectives Grains, % m/m	4.0	5.0

Table 31: RS68:2005; Soya Bean Specifications

Characteristics	Requirements	
	GRADE1	GRADE 2
i) Foreign Matter	1%	1%
(ii) Insect Damaged Seeds, % by mass (max)	2	5
(iii) Other defective grains Shriveled and immature Seeds % by mass(max)	3	8
iv) Impurities % by mass (max)	2	3
v) Oil content (%) by mass (Max).	16	16
vi) Acidity of extractable oil, expressed as oleic acide content (%) (m/m)	2	4
Vii) Crude Protein (N x 6.2 as received, expressed in relating to a moisture and volatile matter content of 13% (m/m) (min).	34	32
viii) Moisture	15%	15%

Table 32: EAS 57: 2000; Part 1:Raw groundnuts for table use and for oil milling

Grade requirements for groundnut kernels for table use and peanut butter

Factor	Requirement			Method of test
	Grade 1	Grade 2	Grade 3	
(i) Damaged kernels, % by mass, max.	0.5	1.0	1.0	Annex A
(ii) Other defects, % by mass, max.	0.5	1.0	1.0	
(iii) Unshelled kernels, % by mass, max.	None	None	None	
(iv) Split/broken kernels, % by mass, max.	1.0	2.0	3.0	
(v) Foreign matter, % by mass, max.	0.1	0.2	0.3	
(vi) Total tolerance for factors 1, 2, 4, and 5, % max.	2.0	3.0	4.0	

Table 33: Grade requirements for groundnut kernels for oil milling

Factor	Requirement			Method of test
	Grade 1	Grade 2	Grade 3	
(i) Oil content of the kernel (on moisture free basis), % by mass, min.	48.0	45.0	42.0	Annex B
(ii) FFA content, % max.	2.0	4.0	6.0	Annex B
(iii) Broken, defective and damaged kernels, % by mass, max.	3.0	5.0	7.0	Annex A
(iv) Foreign matter, % by mass, max.	0.1	0.2	0.3	
(v) Total tolerance for factors 3 and 4	0.1	5.0	7.0	

The standards below can be found on the codex website and they are downloadable

*CODEX STANDARD FOR BANANAS

(CODEX STAN 205-1997, AMD. 1-2005)
* CODEX STANDARD FOR EDIBLE CASSAVA FLOUR (CODEX STAN 176-1989)
http://www.codexalimentarius.net/web/standard_list.do?lang=en

SANITARY AND PHYTO-SANITARY REQUIREMENTS

The Ministry of Agriculture has designed an office purposely mandated to certify plants or crop and animals to ensure that they are clean from diseases and dangerous pests and the exportable products are in conformity with the plant health regulations. Before a business operator engages into export he/she has to obtain Phyto-sanitary Certificate. One of the procedures is that the exporter/importer has to indicate the amount of the products he/she intends to export/import, and then the ministry pays a visit to their premises and ascertains whether the products meet the requirements for exports/imports. So far there are no complaints regarding the procedures to acquire these certificates. The complaints usually emanate from the importer when these goods do not meet the required standards. This happens especially for goods destined to the EU.

TRADE (IMPORT AND EXPORT RESTRICTIONS

Currently there are no restrictions with regard to imports and exports of the staple food in Rwanda as already mentioned Rwanda practices an open trading regime and it believes that openness will unlock opportunities in the agriculture sector.

NON TARIFF BARRIERS

There is no non tariff barriers imposed on imports and exports and Rwanda is taking the lead in encouraging EAC member states to develop a monitoring mechanism that will report the existing NTBs along our economic corridors.

8.0 CONCLUSIONS, POLICY IMPLICATIONS AND RECOMMENDATIONS

- In order to ensure food security and reduce the current levels of imports, Rwanda should devise incentive schemes to attract the private sector to invest heavily in the value chain. The private sector perceives the agriculture sector as risky sector with low profitability compared to other economic sectors such as commercial services and manufacturing sector.
- The Government of Rwanda in collaboration with the Private Sector Federation should put in more efforts to organize farmers along the value chain. The farmers as well as traders are not well coordinated therefore it makes difficult to get accurate information on who is doing what and what the linkages within the value chain.

- We recognized that the government of Rwanda has made great strides in crafting appropriate policies and strategies in order to ensure that the sector becomes the engine of the Rwandan economic transformation; however the response from the private sector is still very low. Therefore we recommend that the government should establish a special fund for those private investors willing to invest in the sector.
- There is also urgent need to sensitize farmers to improve on the crop yield, currently Rwanda lags behind its neigbouring countries when it come to crop yields and this affects its competitiveness within the region. The low crop yield is mainly attributed to low application of fertilizers and farmers do not care about their yields
- The major policy implication is that the government requires huge budget to transform its agriculture system and these resources are not available from the national treasury therefore there is need for a strong partnership between government, private sector and development partners to revitalize the agriculture sector.
- The low yields affect the productivity of the sector hence the government will be losing revenues from either exports or locally consumed products.
- It is also important to note that the agriculture sector has the potential to alleviate poverty in Rwanda and contribute significantly to country's long term economic goals of attaining middle income status by 2020 if appropriate policies and programmes are well implemented.
- During this study we also observed that agricultural programs as enshrined in the Economic development and poverty reduction strategy are on track and the Ministry of Agriculture is more likely to achieve a 7% growth within the sector.
- There is also an urgent need to sensitize financial institutions to extend credit facilities to the agriculture sector at an affordable interest rate. The current interest rates tend to discourage the investors in the sector.

  There is also need to support and enhance the capacities of the existing agriculture research institutions so that they are able to advice the farmers and agro-entrepreneurs on better methods of farming.

  The GoR should double its efforts in improving rural infrastructure since this is the source of agriculture growth.

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- World Bank 2007, promoting pro-poor Agricultural growth challenges and opportunities
- MINAGRI PSTA 11
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- RADA crop intensification program 2009
- Private Sector Federation NTB report for 2008, Business Climate Survey 2008
- Rwanda Revenue Authority Annual statistical report 2008
- Ministry of Finance Economic Performance 2008
- National Bank of Rwanda, statistical bulletin 2004-2008
- Ministry of Agriculture, market price statistics 2003-2008

ANNEXES

1. List of Contacted Persons

List of contacted persons for wheat

Names	Organism	Function	Phone number	Place of meeting
François NSENGIYUMVA	ROPARWA	Executive secretary	0788307930	Kigali
Vincent NZAKIZWANIMANA		Development adviser	0788500069	
Donatien MURENZI	MURENZI SUPPLY COMPANY	General director	0788300759	Kigali
Gervais NGERERO	Project AFSR	Intervention Director	0788301086	Rubirizi
Evariste RIMENYANDE		Agronome	0788844449	
Callixte KAYITESHONGA	COPROVAB	President	0788504608	Musanze
Pierre HATEGEKIMANA		Accountant	0788416874	
Joseph NDABAMENYE	UNICOOPAGI	Coordinator	0788465660	Nyamagabe
JMV MUKWIYE	Minoterie de Nyungwe	Director General	0788560629	Mudasomwa
Aimable Gatete	RADA	Planning officer		Kigali
Aimable Rukundo	RADA	Post harvest management and marketing		Kigali
Taïb A. TAIB	Pembe Flour Mills (Minoterie de Byumba)	Logistics manager	025256429	Gicumbi
Hakim	- Accountant	Accountant manager officer	0783528339	Gicumbi

List of contacted persons for CASSAVA

Names	Organism	Function	Phone number	Place of meeting
François NSENGIYUMVA	ROPARWA	Executive Secretary	0788307930	Kigali
Gervais GASHAKA	ISAR – Mulindi	Director unity Mulindi	0788862152	Rubona
Maize				
Casimir KARANGWA	MINIMEX	Directeur Général Adjoint Technique	0788304626	Nyandungu
Marie-Louise MUNGANYINKA		Agronome	0788853454	
Geoffrey LIVINGSTONE	CATALIST Project, IFDC-RWANDA	Chief of Party	0788302833	Kigali
Thoma SANKUYO NTEZIRYAYO	Maïserie MUKAMIRA	Accountant	0783188095	Mukamira
Laurent RUKAZAMBUGA	-	Processor of Maize	0788560752	Kigali
Anaclet NDENGEYINGOMA	-	Processor of Grains	0788308972	Kigali
Tharcisse NDAYISHIMIYE	ISAR – Rubona	Chargé du Programme Maïs	0788587260	Rubona
Marie Josee MUKANTIRANYA	COAMV	Vice President	0788886604	
Eric NTUKABUMWE	RDO	Coordinateur de terrain	0788517018	Nyagatare
Silvère HABARIMANA	RDI	Chef de production	0788596645	
Sam RUBAGUMYA	SOPAR	Director General	0788301289	Kigali
Rice				
Jonas BAVUGAMENSHI	UCORIRWA	Director General	0788526347	Kigali
KABAGAMBE J.Bosco	Private Sector Federation	Director chamber of Agricultural	0788429460	Kigali
Traders and independent traders				
Alexandre RURANGWA	Trader(beans and sorghum)	-	0788303358	Kigali
J.Damascene SEKAMANA	Trader(beans and sorghum)	-	0788503197	Kigali
Consolee UWINEZA	Trader of Groundnuts	-	0788572408	Kigali
Vincent BIDERI	Trader(beans, Maize and sorghum)	-	0788522204	Kigali
Callixte GASAGARA	Trader(beans and sorghum)	-	0788522720	Kigali
Vincent NDAYISABA	Trader(beans and sorghum)	-	0788460778	Kigali
Jean MUNANA	Trader(Maize)		0788506147	Kigali
Public Sector contacts				

Names	Organism	Function	Phone number	Place of meeting
Epimaque NSANZABAGANWA	MINAGRI	Director of planning	0788612292	Kigali
Jean Marie Vianney NYABYENDA	SIM/MIS MINAGRI	Statistician	0788463684	Kigali
Peace BASEMERA	Ministry of Trade and Industry	External Trade	0788574322	Kigali
Jean Baptiste BIZIMUNGU	RRA/Customs	Head of statistics and documentation section	0788480372	Kigali

2 Production in Kcal, Proteins and Lipids by district

Production in MT

		Southern Province							
Crop	**Weight**	Huye	Gisagara	Nyamagabe	Nyaruguru	Ruhango	Nyanza	Kamonyi	Muhanga
Sorghum	3,038	0	0	0	0	0	0	0	0
Maize	3,225	6,928,920	3,862,806	6,659,002	7,194,699	12,949,634	8,761,275	13,662,514	10,515,111
Wheat	2,688	0	0	1,849,366	1,434,536	0	0	0	0
Rice	2,070	4,162,504	21,689,581			196,974	4,124,961	1,046,539	0
Beans	3,031	17,997,647	15,436,095	14,268,428	10,312,067	17,687,147	12,468,318	19,277,421	18,470,368
Peas	3,121	957,762	794,750	6,143,402	5,552,227	401,659	392,062	406,805	1,220,907
Groundnuts	2,780	853,028	865,139	0	0	626,039	1,466,593	634,060	589,007
Soya	3,670	7,488,051	6,540,604	6,869,123	5,383,620	6,729,181	4,517,210	7,114,318	8,133,915
Banana	388	12,323,691	10,148,497	5,877,583	5,823,650	12,546,978	6,349,660	17,940,850	21,870,055
Irish Potato	574	2,203,531	1,889,124	19,273,260	18,392,328	3,184,235	2,785,219	4,568,259	4,625,243
Sweet Potato	1,081	12,765,499	11,005,499	14,872,786	10,197,668	7,647,861	8,958,146	7,745,847	13,560,678
Yam & Taro	790	1,453,669	1,787,041	3,260,250	4,634,873	1,651,079	793,417	1,672,233	3,345,810
Cassava	1,023	23,548,396	37,165,747	16,143,628	20,474,233	56,557,150	49,510,780	65,724,084	38,964,256
Vegetables	523	8,020,092	5,915,610	3,453,551	2,152,691	8,408,520	6,566,085	8,516,252	6,815,739
Fruits	523	4,792,798	5,324,049	1,438,979	896,955	3,363,408	3,939,651	3,406,501	3,407,869
Total		103,495,588	122,424,541	100,109,356	92,449,546	131,949,866	110,633,376	151,715,683	131,518,959

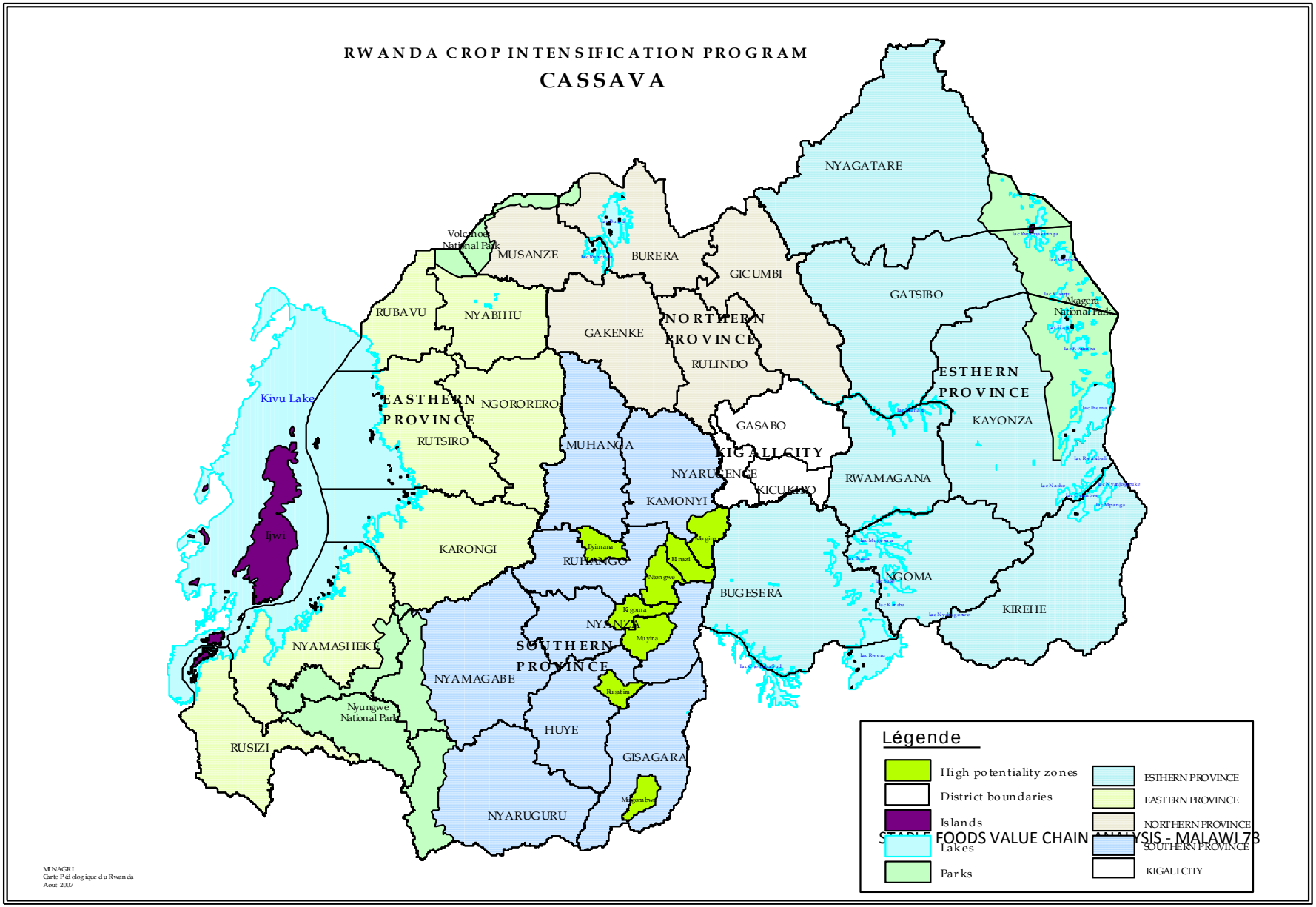
Production in proteins (T)

		Southern Province							
Crop	**Weight g/kg**	Huye	Gisagara	Nyamagabe	Nyaruguru	Ruhango	Nyanza	Kamonyi	Muhanga
Sorghum	71.54	0	0	0	0	0	0	0	0
Maize	84.92	182	102	175	189	341	231	360	277
Wheat	93.38	0	0	64	50	0	0	0	0
Rice	39.93	80	418			4	80	20	0
Beans	195.76	1,162	997	922	666	1,142	805	1,245	1,193
Peas	205.32	63	52	404	365	26	26	27	80
Groundnuts	117.47	36	37	0	0	26	62	27	25
Soya	310.71	634	554	582	456	570	382	602	689
Banana	3.92	124	102	59	59	127	64	181	221
Irish Potato	11.91	46	39	400	381	66	58	95	96
Sweet Potato	14.29	169	146	197	135	101	118	102	179
Yam & Taro	13.93	26	32	58	82	29	14	30	59
Cassava	5.21	120	189	82	104	288	252	335	198
Vegetables	8.91	137	101	59	37	143	112	145	116
Fruits	8.91	82	91	25	15	57	67	58	58
Total		2,861	2,859	3,026	2,539	2,921	2,271	3,227	3,191

Production in lipids (Kg)

		Southern Province							
Crop	**Weight G/Kg**	Huye	Gisagara	Nyamagabe	Nyaruguru	Ruhango	Nyanza	Kamonyi	Muhanga
Sorghum	4.26	0	0	0	0	0	0	0	0
Maize	37.94	82	45	78	85	152	103	161	124
Wheat	14.65	0	0	10	8	0	0	0	0
Rice	2.85	6	30			0	6	1	0
Beans	13.53	80	69	64	46	79	56	86	82
Peas	10.13	3	3	20	18	1	1	1	4
Groundnuts	226.84	70	71	0	0	51	120	52	48
Soya	144.7	295	258	271	212	265	178	281	321
Banana	0.71	23	19	11	11	23	12	33	40
Irish Potato	0.7	3	2	23	22	4	3	6	6
Sweet Potato	1.79	21	18	25	17	13	15	13	22
Yam & Taro	0.77	1	2	3	5	2	1	2	3
Cassava	1.47	34	53	23	29	81	71	94	56
Vegetables	0.59	9	7	4	2	9	7	10	8
Fruits	0.59	5	6	2	1	4	4	4	4
Total		632	582	534	456	685	577	743	718

STAPLE FOOD MAPS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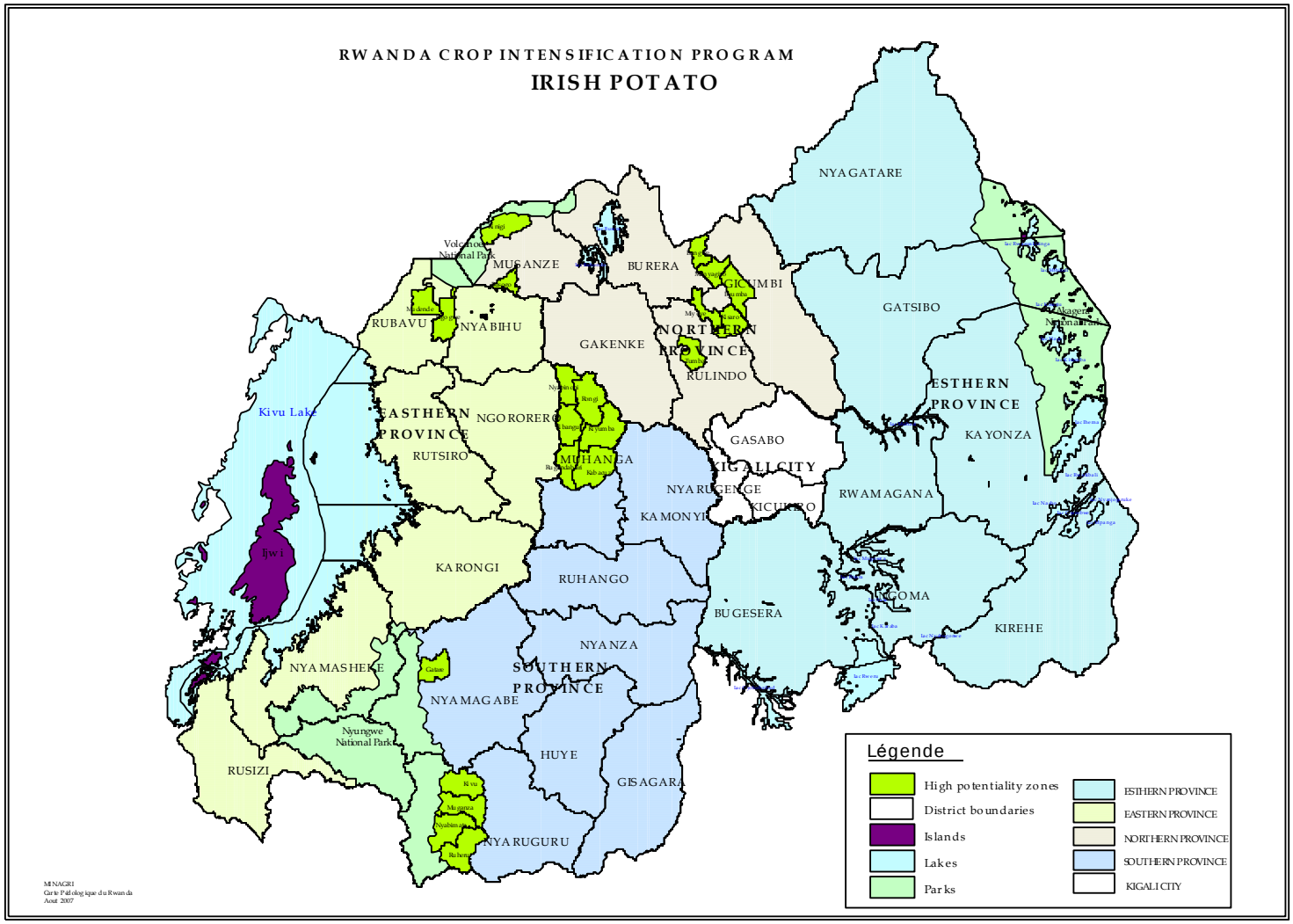
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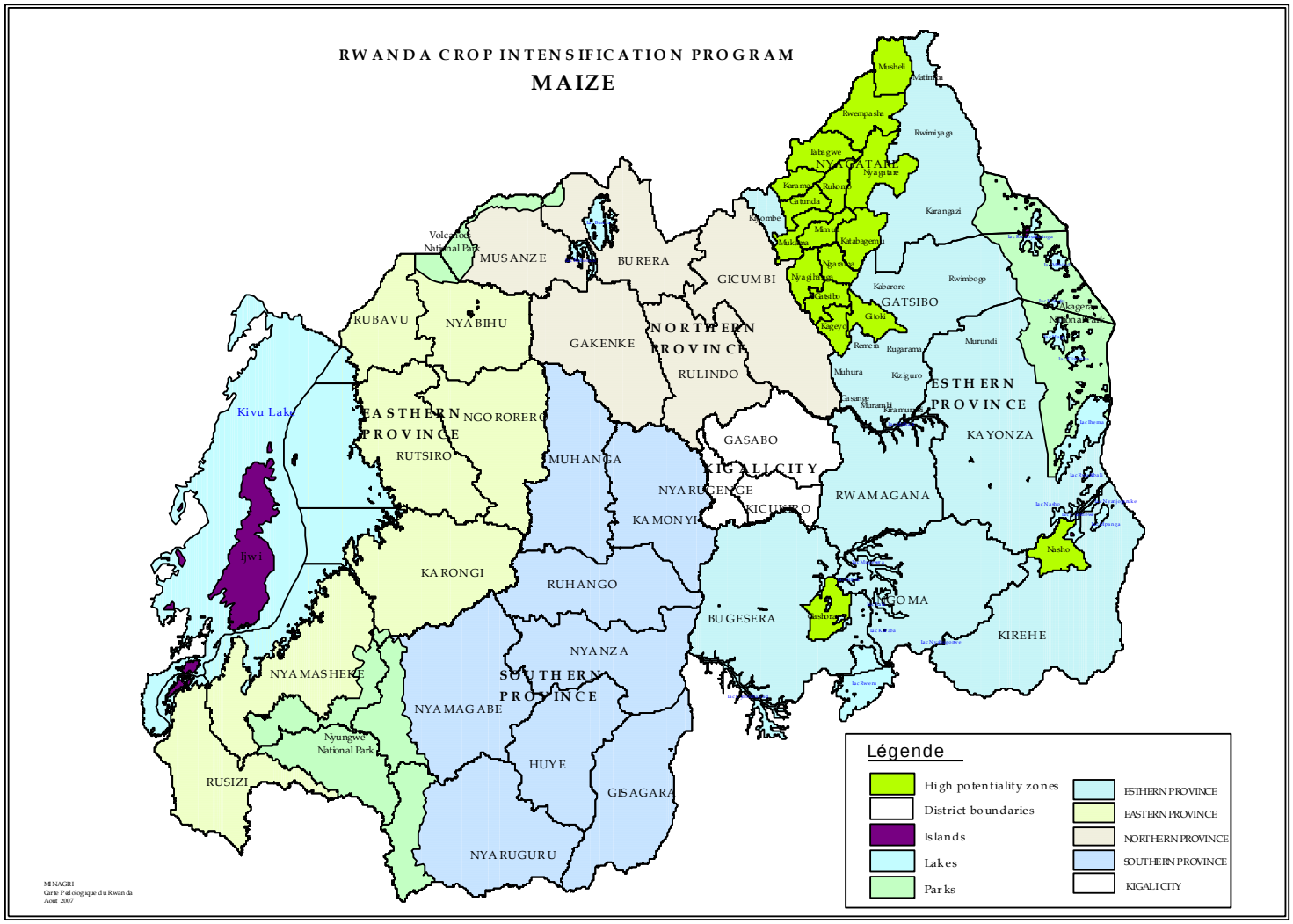
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Volcanoes National Park
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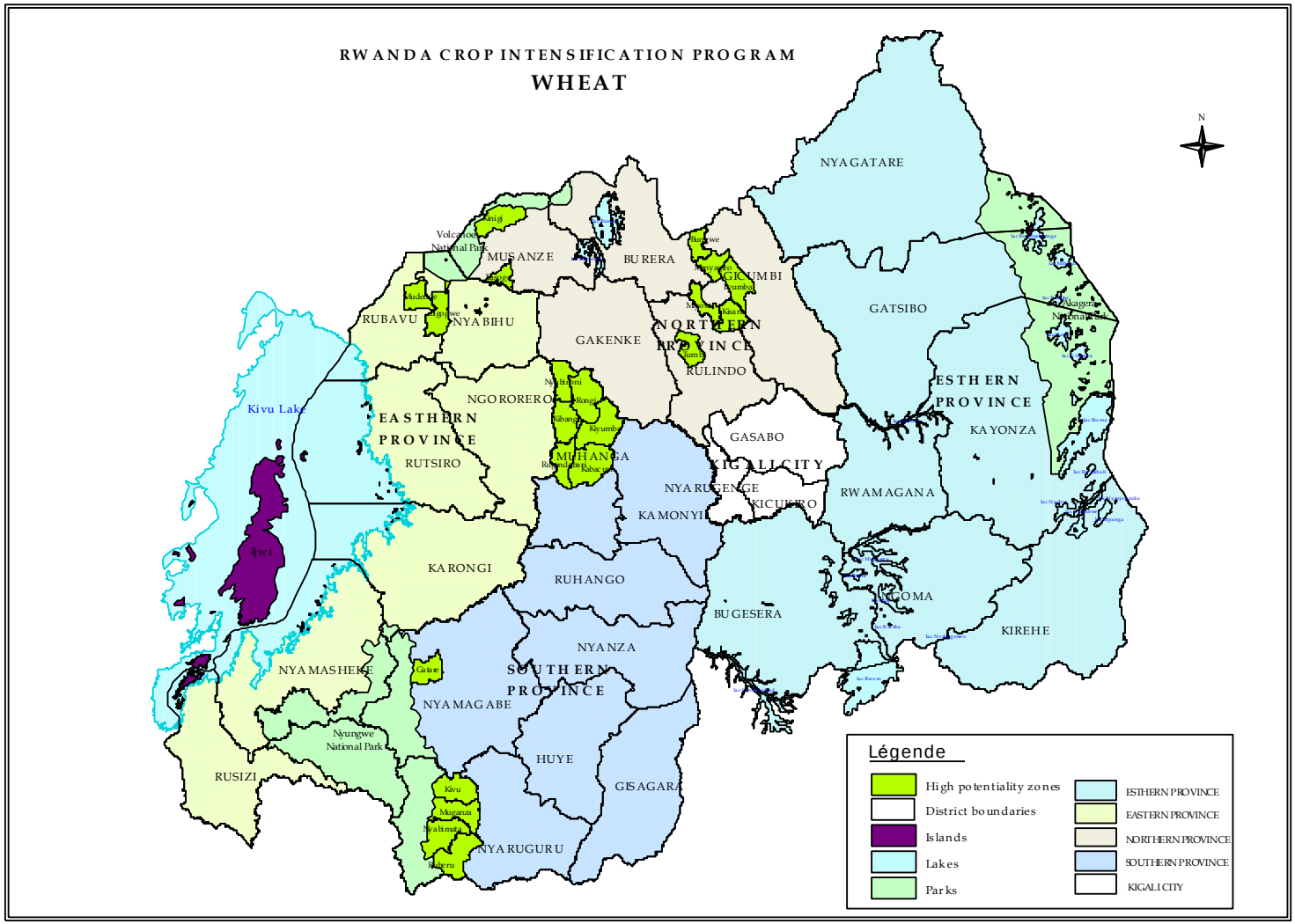
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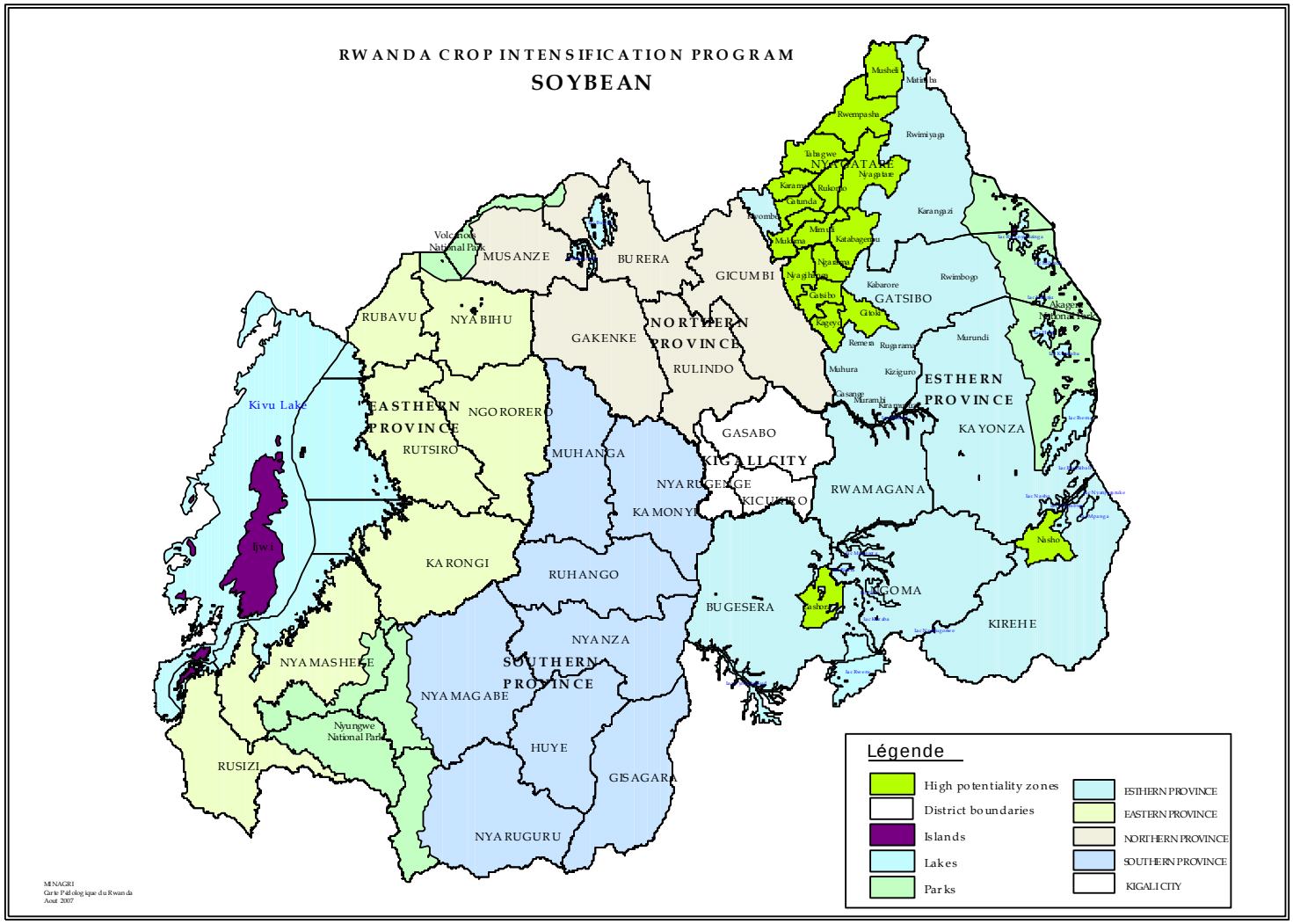
KAYONZA
Kivu Lake
EASTERN PROVINCE
NGORORERO
GASABO
RUTSIRO
MUHANGA
KIGALI CITY
NYARUGENGE
RWAMAGANA
KICUKIRO
KAMONYI
Ijwi
KARONGI
RUHANGO
UMUTOMA
BUGESERA
KIREHE
NYANZA
NYAMASHEKE
SOUTHERN PROVINCE
NYAMAGABE
Nyungwe National Park
HUYE
RUSIZI
GISAGARA
NYARUGURU
Légende
High potentiality zones
District boundaries
Islands
Lakes
Parks
ESTHERN PROVINCE
EASTERN PROVINCE
NORTHERN PROVINCE
SOUTHERN PROVINCE
KIGALI CITY


RWANDA CROP INTENSIFICATION PROGRAM
SOYBEAN
Mushubi
Matimba
Rwempasha
Rwimiyaga
Tahingwe
NYAGATARE
Nyagatare
Karama
Rukomo
Gatunda
Karangazi
Nyombo
Mimuli
Mukama
Katabagemu
Volcanoes National Park
MUSANZE
BURERA
GICUMBI
Nyamiyaga
Nyagihanga
Kabarore
Rwimbogo
Gatsibo
GATSIBO
Kageyo
Gitoki
Akagera National Park
RUBAVU
NYABIHU
GAKENKE
NORTHERN PROVINCE
RULINDO
Remera
Rugarama
Murundi
Muhura
Kiziguro
ESTHERN PROVINCE
Kivu Lake
EASTHERN PROVINCE
NGORORERO
Muramba
Kiramuruzi
KAYONZA
RUTSIRO
GASABO
MUHANGA
KIGALI CITY
NYARUGENGE
RWAMAGANA
KICUKIRO
KAMONYI
Ijwi
Nasho
KARONGI
RUHANGO
BUGESERA
NGOMA
Gashora
KIREHE
NYANZA
NYAMASHEKE
SOUTHERN PROVINCE
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SOUTHERN PROVINCE
KIGALI CITY
MINAGRI
Carte Pédologique du Rwanda
Aout 2007

2. MARKET PRICES FOR STAPLE FOODS PER PROVINCE IN RWANDA

2003-2009

PROVINCE	(All)
DISTRICT	(All)

		Data															
Years	Months	Sorghum	Maize	Rice	Wheat	Cassava	Sweet potato	Irish potato	Cooking Banana	Bean	SOYA	Garden peas	Milk	Groundnut	Onion	Tomato	Passio fruit
2003	Jan	77	95	264	118	44	42	45	60	116	177	173	215	435	205	99	267
	Feb	69	81	263	116	47	45	44	60	80	146	151	217	371	163	68	228
	Mar	68	76	265	117	54	51	47	60	87	129	155	227	337	139	71	223
	Apr	72	81	282	115	64	54	50	60	94	135	163	226	330	128	119	231
	May	71	84	286	125	72	49	50	62	93	140	164	223	370	142	156	227
	Jun	61	87	284	138	58	43	54	56	86	137	159	225	378	172	103	233
	Jul	61	95	289	141	72	44	58	58	105	146	171	228	377	180	93	260
	Aug	63	101	290	129	73	49	61	56	121	156	182	227	370	176	83	316
	Sep	67	107	310	129	84	50	66	53	124	173	198	219	389	162	84	309
	Oct	76	114	332	132	93	49	66	53	129	186	201	222	420	164	79	278
	Nov	95	127	353	139	114	56	65	61	135	192	203	223	443	176	96	291
	Dec	103	134	371	142	126	58	58	67	131	191	201	211	440	179	105	303

2006	Jan	121	122	380	188	123	58	66	82	173	210	245	231	503	232	141	323
	Feb	127	125	392	191	120	63	76	87	173	219	252	218	501	235	157	318
	Mar	145	135	397	218	133	68	83	91	196	228	270	218	590	253	200	277
	Apr	157	145	406	219	141	72	81	96	211	236	293	225	611	288	211	285
	May	170	161	418	236	153	75	87	95	220	236	294	216	644	312	194	299
	Jun	164	161	420	259	155	77	94	100	179	232	246	228	625	300	163	324
	Jul	149	143	436	214	150	79	106	99	178	234	257	234	546	276	208	311
	Aug	146	155	445	220	149	88	119	106	187	233	277	251	534	287	216	354
	Sep	147	157	450	222	153	89	112	102	208	253	294	259	555	284	176	363
	Oct	176	176	449	235	157	95	112	105	233	254	313	242	593	290	148	359
	Nov	192	180	450	237	170	92	94	105	235	262	316	224	587	296	171	370
	Dec	197	190	467	239	183	101	103	107	242	259	316	230	586	321	191	382

2007	Jan	195	180	463	248	181	107	110	112	209	253	314	227	605	287	188	377
	Feb	180	173	474	257	186	115	125	114	199	240	285	229	601	278	174	362
	Mar	182	176	472	266	187	114	122	114	201	243	289	232	602	287	179	368
	Apr	170	134	478	256	201	107	138	115	230	246	330	181	622	290	232	343
	May	171	143	478	290	202	75	108	110	230	242	314	223	613	279	197	306
	Jun	155	141	471	284	188	71	108	102	232	234	308	233	600	267	207	289
	Jul	148	142	472	300	178	70	112	96	258	249	322	230	582	264	210	301
	Aug	161	148	481	292	171	73	123	93	301	283	376	241	584	272	187	336
	Sep	167	165	478	256	166	67	120	89	313	312	483	260	610	251	170	370
	Oct	163	173	450	237	154	61	109	83	362	337	547	242	628	237	190	378
	Nov	172	171	455	241	154	56	95	83	375	365	549	235	650	260	215	409
	Dec	178	176	464	233	148	56	92	89	337	355	471	235	669	276	194	451

2008	Jan	180	178	487	255	137	58	97	91	276	312	439	239	648	240	174	394
	Feb	165	167	476	259	134	58	98	85	259	301	442	230	637	255	169	319
	Mar	173	154	497	240	137	57	98	83	273	288	447	234	633	260	174	337
	Apr	181	158	539	261	163	56	100	81	283	311	450	243	664	264	225	350
	May	200	165	557	267	143	51	99	82	281	318	464	239	677	317	229	355
	Jun	205	178	602	287	145	49	110	84	290	337	446	243	652	315	206	382
	Jul	195	188	610	280	138	51	119	80	334	368	473	257	659	288	243	401
	Aug	211	204	616	273	139	53	127	80	364	404	532	277	660	296	272	386
	Sep	233	229	632	260	142	60	134	86	378	433	577	282	726	291	234	385
	Oct	250	254	650	273	155	69	132	91	370	448	558	278	770	340	212	387
	Nov	269	262	646	281	164	76	126	98	345	424	536	266	754	415	257	438
	Dec	288	252	639	301	155	75	115	97	303	400	461	260	727	337	280	476

2009	Jan	280	230	635	290	162	77	121	103	254	388	421	269	710	261	240	452
	Feb	278	221	644	286	168	82	125	103	249	358	453	268	689	263	256	451
	Mar	269	208	644	294	172	98	130	106	234	337	455	266	681	262	321	413
	Apr	270	215	641	294	180	96	131	106	237	338	437	273	676	279	361	427
	May	266	213	635	293	175	91	133	104	224	332	422	272	679	286	290	442
	Jun	248	219	635	304	179	89	123	102	220	326	408	261	667	276	278	455

CURRENT EXCHANGE RATE: 1 USD = 570 RWF