AGRICULTURAL POLICY 1995-2016 IN RWANDA:
CONTRAST BETWEEN THE BEAUTIFUL STATISTICS OF AGRICULTURAL PRODUCTION AND
CHRONIC FAMINES IN RWANDA
Charles Ndereyehe

1. Introduction
February 24, 2016, I published an article in Kinyarvanda which analysed the recent publications on agriculture in Rwanda. As in previous analyses, I was pointing out once again that the economic policy of the Rwanda government dominated by the RPF (Rwandan Patriotic Front), have led Rwanda agriculture to a dead end.

Many local media continue to publish articles expressing the same concern, highlighting the contrast between the shiny statistics of increased agricultural production and chronic famine raging in every corner of the country. The rosy government statistics, purporting that there is food self-sufficiency for many Rwandans, does not match the real situation on the ground. It is common knowledge that official statistics are often manipulated, to show another image of agricultural and economic success in Rwanda, and hence reinforce the official narrative that Rwanda is on the way to ensure food self-sufficiency. Yet all economic indicators are flashing red, showing chronic poverty and famine!

According to the 2013 World Report on Human Development, Rwanda has a Gini index of 0.53, which ranks Rwanda among the most unequal countries in the world. The richest 10% account for 40% of income, while the poorest 10% are content with just 3.5% of income. In fact, 82% of the population lives on less than $2 USD per day, the population below the poverty line (those living on less than $1.25 / day) is 63.2% instead of 44.9% put forward in official figures. The population languishing in multidimensional poverty is estimated at 69% by the same report.

Local media show economic realities that demonstrate in figures and images the existence of poverty, while officials prefer to live in denial of the plight of Rwandans because they want to hide it from the international community. The unfortunate alibi, which consists in the mushrooming of infrastructural development projects in "the very clean capital city Kigali", hides this terrible evil that crushes the poor (Ansoms 2009). Ansoms observes that: "as elsewhere, policy is a monopoly of the elite in Rwanda. The majority poor, small smallholder in rural areas, undoubtedly have little

---

Charles Ndereyehe: Agricultural Engineer, Head of the Mutara Agricultural Service-OVAPAM 1977-1986; Coordinator of Agricultural Services in Gikongoro and Director of PIA-PDAG project 1986-1992; Member of the National Commission of Agricultural policies (CNA) 1990-1992; Director General of the ISAR from 1992 to 1994.

French version of the writing was released in July 2016 while this in English is available since September 2016. (http://www.fdu-rwanda.com/fr/english-politique-agricole-1995-2016-au-rwanda-contrast-entre-les-belles-statistiques-de-productions-agricoles-et-les-famines-chroniques/)
influence on the political situation. Policy makers have little institutional or personal links with rural development issues, and many have a condescending attitude, even contemptuous, toward poor farmers practicing “traditional” forms of agriculture 

The failure of the RPF agricultural policy stems from the following main reasons:
- Agricultural produce is poorly paid by cooperatives controlled by the RPF and the agricultural produce ends up in the processing industries or in trading companies attached to the RPF;
- Economic policy is not primarily intended to support agro-pastoralists but to serve the interests of the omnipresent companies of the ruling RPF political party.

This explains the widespread rural poverty. Although primary education is declared "free", young children are unable to attend school because of poverty and hunger; instead, they roam in urban centres or engage in odd jobs to survive.

Some local authorities, because of the fear of failing to meet sometimes unreasonable performance targets, use local militias to squeeze the poor into paying health insurance fees which they can hardly afford, or to force them to rebuild their destroyed homes under the pretext that they do not meet the decreed housing standards.

2. Sources and methods

Two articles have particularly impressed me. The first has been written by an English Researcher Dr. Neil Dawson, highlighting how the agricultural policy of Rwanda has had an adverse impact on the poor. The second, dated 16.02.2016 and written in Kinyarwanda echoes the statement made by the Minister of Agriculture and Livestock, Mrs. Dr. G. Mukeshimana, pointing out that the problems of Rwanda agriculture are related to a drop in agricultural research.

This article therefore aims to comment on or clarify some points made in the publications of Dr. Neil Dawson and the Minister of Agriculture and Livestock.

To better understand the problem, we have relied on official or published documents which include:
- Crop Intensification Programme in Rwanda;
- Agricultural Reform Act;
- Publication of LPDI (Land Deal Politics Initiative);
- Agricultural research results of ISAR (Institute of Agronomic Sciences of Rwanda) alone or in collaboration with International Agricultural Research Centres from 1979 to 1992;
- Local newspapers written in Kinyarwanda.

The information collected will allow me to comment on the publication of Dr. Neil Dawson, and on the public statement of Mrs. Minister of Agriculture and Livestock, Dr G. Mukeshimana. It will also provide an opportunity to give a brief update on agricultural research in Rwanda from 1930 to 1994.
3. Findings and discussion

3.1. Publication of Dr. Neil Dawson

The article entitled "Rwanda Surprisingly Bad Hit by the 'Green Revolution': "Rwanda is unpleasantly surprised by the green revolution" is quite clear on the situation in Rwanda. This is also highlighted through the interview-article "Rwandan agricultural policies hurting the Poorest of the poor" by L. A. Bagnetto in RFI (Radio France Internationale).

The article corroborates the reservations and concerns that I have always expressed with regard to the agricultural policy of the RPF. Specific facts show that the economic policy in general and agricultural policy in particular are not intended to bring farmers out of poverty:

- The choice of the neoliberal system serves as a smokescreen that hides a blatant monopolistic status of the ruling RPF party companies;
- The agricultural reform that promotes the despoliation of farmers of their land and the introduction of the system of mono-cropping are catastrophic policies for the poor and are intended to create new capitalists made from nowhere by the ruling party RPF.

Dr Neil Dawson believes that forcing farmers to adopt mono-cropping and to abandon their multi-cropping system of farming is a way to reduce his household income. This leads to a bitter reality: "the transformation of Rwandan agriculture is based on the use of inputs (seeds, fertilizers, pesticides ...), which requires the monetization of agriculture and having a capital that the poor farmer does not have".

It is absurd to force the farmer to cultivate this or that crop or to force him to be part of an agricultural credit scheme. The farmer is an economic operator; it is up to him to take the financial risk, and no one else should impose it on him.

It is even worse to threaten him by enacting a law on agricultural reform stipulating that he would lose his/her land if he/she fails to reach the production targets set by the state. Thus the State does not take him/her as a responsible person and therefore the farmer is always at risk of losing his/her land, main factor of production. When he/she loses the land he/she shifts from the status of being poor to the status of being "landless". He/she is pushed to wandering around, causing family instability and misery.

These policies of plundering the land of the poor, make people victims of laws passed by parliamentarians but are in reality an imposition of the ruling party RPF. These parliamentarians are more accountable to the ruling party which controls their entry in parliament and therefore have little interest in farmers. This lack of accountability to the farmers has produced the results that Dr. Neil Dawson has spelt out.

This situation has been exacerbated by the fact that farmers are victims of local government administration that has a “performance targets” drawn by the ruling RPF regime to which the administration has to report. Poor farmers therefore live in an unmanageable and very difficult situation as no one is there to defend them. Dr. Neil Dawson notes that when the farmer is
pushed to a hopeless situation, he/she prefers to anticipate events and to sell his/her land. Farmers are thus forced to become unemployed, wandering around with children without a future; the poverty is hence compounded by landlessness;

The findings of Dr. Neil Dawson have been validated by three facts:

- First: The Rwanda government forces the farmer to take an economic risk without giving him/her financial guarantees with regard to the economic viability of the proposed projects. This is because at the end of the production chain, there is no remunerative prices for agricultural produce.

- Secondly: The farmer normally has his own system of farming to ensure food security for his/her family. The government does not guarantee that food security or the availability of substitute food products or of basic food products that the farmer does not produce himself/herself. There is also no indication that the financial income of mono-cropping will provide enough cash to buy, at affordable prices, what he/she cannot produce himself/herself.

- Thirdly: Even though domestic labour is considered "free", the government gives no guarantee that the seeds sold to farmers are of good quality, nor does it provide an undertaking to insure the farmer or to exempt him/ her from paying the debt incurred when buying seeds and fertilizer in case of bad harvest due to unfavourable weather conditions;

The researcher Dr. Neil Dawson does not deny that agricultural production could increase, but noted that this would only be valid for one third of producers. If 85% of Rwandans are farmers as stated by the Honourable Minister of Agriculture and Livestock, it means that 57% do not record any increase in production. This situation therefore affects almost 7,000,000 people!

The families will never reach performance targets set by current agricultural policies. This means that their land risks to be taken away and hence pushed into irreversible poverty. That explains the famine that prevalent in every corner of Rwanda, even formerly bread baskets of the country like the Eastern Plateau of Mutara and north-western Rwanda.

The central problem of this whole system stems from the policy of prohibiting the farmer from choosing themselves a farming system that ensures food security for the family. The peasant is forced to practice mono-cropping which, in his/her eyes, has no technical or economic justification. Moreover, further analysis indicated that behind the Rwandan Agricultural Policy nicknamed "green revolution" are the interests of US multinationals "Monsanto and Syngenta" associated with local economic operators who are part of the ruling party RPF business corporate chain. These companies control the Banking system that provide agricultural credit and award contracts relating to the transportation of farm inputs that farmers are forced to buy. Farmers have no power to negotiate prices of these inputs since they are trapped in a neo-liberalism nurtured by the monopoly of these companies owned by the ruling party. This is the farce of "good governance" that the regime sells ad libitum to its foreign sponsors.
3.2. Statements by the Minister of Agriculture and Livestock, Mrs. Dr. G. Mukeshimana.

The Minister stated: "Some problems that we record in agriculture are related to climate change and the sharp decline in agricultural research with the replacement of the Institute of Agronomic Sciences of Rwanda (ISAR) by Rwanda Agriculture Board (RAB). This is due also to the fact that ISAR has left little results...".

This statement seems to be very ambiguous. Is the statement related to research findings or to germplasm and animals lost during the war?

One understands better what the Minister means when she adds: "this means that the RAB could not multiply plant seeds or produce new varieties, produce inputs for increased production, or research on production constraints in order to devise appropriate solutions. ..."21. The fact of the matter is that the current problem has little to do with ISAR. But of course Mrs. Minister is embarrassed and needs to find a plausible explanation for the catastrophic situation into which the government has plunged Rwanda agriculture.

As I pointed out in my conference in Amsterdam on November 19, 2015 "Sustainable development is not feasible without true reconciliation and democracy in Rwanda, which are prerequisite for peace and security"22, one of the handicaps for Rwanda is the eternal repetition: the newcomer destroys what his predecessors have built, to restart afresh at zero. This lack of capitalization of the efforts already made results in a huge and regrettable waste of financial resources.

Yes, agricultural research has suffered from the war of "liberation" of the RPF (1990-1994) and post-conflict instability (1995-2002). But one thing must be made clear: research is not witchcraft and the magic wand does not work. Whether fundamental or applied and development research, it requires a lot of human and financial resources, time and assiduous and unwavering integrity. Unfortunately, the Rwanda agricultural research today seems to suffer from the lack of political will23 and ethical values from the RPF regime and among some researchers. Is it not surprising, for example, to see that ISAR agricultural research results, are rarely referenced in the new research?

Yet these results are available in national institutions of Agricultural Research of Burundi, Kenya, Uganda and Ethiopia who formed one common research group ASARECA (Association for Strengthening Agricultural Research in Eastern and Central Africa) and in the International Research Centres of the CGIAR24 (Consortium of International Agricultural Research Centres) who worked with ISAR.

If people want to carry out research without being well documented, how does Dr. Mukeshimana imagine to achieve tangible progress in agricultural research?
3.3. Brief overview of agricultural research in Rwanda 1930-1994

Agricultural research in Rwanda began with INEAC\textsuperscript{25} (National Institute for Agronomic Study of the Belgian Congo) in 1930. It received its actual form in 1950 [ten-year development plan for the territory of Ruanda-Urundi (1950 -1960)] to solve the problems of famine that ravaged Rwanda and Burundi which had been placed under Belgian trusteeship by the United Nations (UN).

The transfer of power between Belgian officials and Rwandan researchers took place after independence in 1962, the year of the birth of the Institute of Agronomic Sciences of Rwanda (ISAR). Agricultural research began to grow around 1972 with the arrival of Rwandan university graduates (agricultural engineers, veterinarians, forest engineers ....). When the 1990 war broke out, ISAR had just had an experience of 28 years of research in Agriculture - Forestry - Animal husbandry.

The effort to have a buoyant quality research began with the first "master plan" in 1985. In 1994, this plan was in its second phase which had led to the decentralization of research to take into account regional agricultural specialization and the need for research development in the real environment on the ground. In this respect 8 regional centres of agricultural research had been created: 

- **Ruhengeri**: Potato - Maize; 
- **Rwerere**: Wheat - Triticale - Potato - Maize; 
- **Mutara**: Rice - Soybean - Irrigated Maize – Animal Breeding (ranching); 
- **Kibungo**: Banana; 
- **Karama**: Sorghum - Cassava – Animal Breeding - Sprinkler irrigation; 
- **Rubona**: Cassava - Sweet Potato - Coffee - Sorghum - Bean - Arboretum; 
- **Gakuta-CZN**: Forestry - Agroforestry – Acid Soils; 
- **Ntendezi**: Banana - Coffee.

It is regrettable that the war has destroyed research findings and research infrastructure obtained through costly investments. Things destroyed included several selected animals and perennials/tree crops (coffee and forest heritage); the germplasm bank created at Rubona; those in Ruhande and Ruhengeri (National Programme for Potato) were ransacked; several research materials (Laboratories) were looted. However, if there was a political will and adequate funding, plant seeds\textsuperscript{26} can be recovered in partner research institutions in ASARECA networks and CGIAR.

An uninformed reader of agricultural research publications in Rwanda could think that research only started after the RPF took power in 1994. It is good that the Honourable Minister of Agriculture and Livestock does mention the ISAR research and her researchers should make reference to previous results obtained by ISAR researchers. It is neither honest nor too professional to graft research or other scientific research on political changes and propaganda. ISAR had achieved very significant results in the crop/vegetable field. That's why it is heart breaking to read or hear that "farmers planted the cassava that has not produced; farmers planted imported seeds and did not germinate ... ".

\textsuperscript{25} INEAC: INstitut National d'Études Agronomiques du Congo Belge.\textsuperscript{26} Plant seeds: these include plant species with a long seed life (germination rates in the field between 5 and 15 years).
Should we blame the research and researchers or inconsistent agricultural policies?

Looked at it very closely you will find that ISAR had selected plant seeds, suitable for each agro-climatic region and had developed appropriate farming techniques. We’ll give a few non-exhaustive examples in order to clear any shadows of doubt stemming from insinuations made by the Minister of Agriculture and Livestock.

3.3.1 TUBERS:

- **Potato**: *Sangema* for rich land in high altitudes; *Cruza* for acid soils; and other varieties or cultivars such as *Mabondo, Kirundo, Kinigi, Gahinga, Montsama*, etc. were created or selected by PNAP (*National Programme for Potato*) in Ruhengeri. Most exceed a production of 15t / ha, the best reached 30 t / ha of fresh tubers; In this area, ISAR was working with CIP (*International Potato Centre*) research stations Nairobi- Kenya and Lima-Peru;
- **Cassava**: *Creolina, Kibombwe, Kiryumukwe, Eala, Maguruyinkware, Mulundi* which met or exceeded the production of 20t / ha of fresh roots. Roots and Tubers programmes were implemented in collaboration with IITA (*International Institute of Tropical Agriculture*) in Ibadan, Nigeria;
- **Sweet potatoes**: *Tura(tugure), Mugande, Karebenzungu, Masetsa, Gihingumukungu, Nserura, Rusenya, Nsasagatebo, Gahungezi, Wadada, Rutambira* and others whose productivity could exceed 15t / ha of fresh tubers.

3.3.2 LEGUMES:

- **Bean**: *Umubano, Vuninkingi, Puebla, Gisenyi Ngwinurare, Mabondo, Urunyumba* with productivity exceeding 1.5t / ha of dry seeds;
- **Soybean** varieties which were widely disseminated: *Palmetto, Ogden, Bossier*, with support from the breeding programme and Rhizobium inoculation of the laboratory service Rubona;
- **Pea**: Collection with special focus on varieties *Kyondo, Nyagashaza, Rangiro II Cyambeiro and Ibyerabirora*.

ISAR was working with CIAT (*International Centre for Tropical Agriculture*) in Cali, Colombia and CIRAD (*Centre for International Cooperation in Agronomic Research for Development*) in Paris, France.

3.3.3 CEREALS:

- **Maize**: ISAR had an advanced programme of selecting varieties and cultivars, and multiplied them in the centres of Ruhengeri and Rubona. This included among others *Nyirakagori, Bambu, Katumani* in collaboration with CYMMYT (*International Centre for the Selection and Breeding of Maize and Wheat*), in Mexico City. Productivity reached 4t / ha of dry grain and the producer was keeping his seeds;
- **Sorghum**: Several varieties selected including *SVR157* which was used as raw grain in BRALIRWA (*Brewery and Lemonade manufacturer of Rwanda*). ISAR was collaborating in
this programme with ICRISAT (International Crops Research Institute for the Semi-Arid Tropics).
- **Rice**: ISAR had begun the breeding programme in close cooperation with the rice projects;
- **Wheat-Triticale**: ISAR had selected and distributed some varieties and cultivars, especially to provide enough raw materials to mills Kabuga / Byumba and Ruhengeri.

### 3.3.4 ORCHARD - FRUIT AND HORTICULTURE:
- **Orange trees**: ISAR was doing research on the "greening" and other diseases and pests;
- **Bananas**: Collection of "germplasm" with 62 cultivars at Rubona and setting up a "laboratory" purification by banana tissue “culture in vitro”. This programme was implemented in collaboration with IRAZ (Institute of Agricultural and Zootechnical Research) of Gitega / Burundi;
- **Avocado**: ISAR had made the selection of adapted varieties that were much appreciated by farmers.
- There was also a collection of varieties of pineapple, vegetable crops and flowers.

### 3.3.5 OTHER CROPS (INDUSTRIAL):
ISAR was working with “Office des Cultures Industrielles” (OCIR).
- **Coffee trees**: The research on varieties, cultivation techniques and the control of diseases and pests was very advanced. The best known varieties are: *Mibilizi; Bourbon Mayagwez, Jackson, Catara, Catuai ...* particular emphasis was also placed on mulch in combination with agroforestry in partnership with ICRAF (International Centre for Research in Agroforestry) in Nairobi, Kenya.
 ISAR distributed seeds to all nurseries of Rwanda and had planned to start soon a breeding programme for apical tissues in laboratory in collaboration with the University of Gembloux.
- **Tea, Pyrethrum and Cinchona (Quinquina)** were kept in collection. Pyrethrum was first processed at Tamira and then shelved, under the care of OPYRW (Pyrethrum Board in Rwanda).

### 3.3.6 FORESTS AND AGROFORESTERY:
- **Natural Forest of Nyungwe and others**: In collaboration with American universities and forestry projects "Gishwati and Nyungwe", ISAR was doing research on the conservation, enhancement and rational exploitation of natural forests.
- **The Centre for forest seeds**, at Ruhande supplied seeds to all reforestation nurseries of the Ministry of Agriculture and Livestock.
- Based on farmers' knowledge and practices, and on the choice of locally adapted and exotic species, ISAR had begun to streamline Agroforestry that had become a common practice across the country.

This programme was supported by the International Centre for Research in Agroforestry, ICRAF Nairobi, Kenya.
3.3.7 LIVESTOCK:

- **Cattle**: Research on crossbreeds "Jersey, Pie-black, Brown Swiss, Sahiwal" was very advanced. The results had allowed progressive farmers and cooperatives to benefit from the efficient crossbreeds "crossbred three races Ankole-Jersey-Sahiwal" adapted to local ecological environment and socio-economic life and to constraints in feeding the livestock.
- Research on the **local breed "Ankole"** very resistant to many diseases and infections, and less demanding on energy, began in 1976 and identified quality bloodstock and female offspring which could give an average 10L /d of fresh milk.
- **Sheep and Goats**: The research on small ruminants, including sheep and goats, was in its beginning and in parallel with artificial insemination.
- **Poultry and Fish farming**: ISAR had left the research to projects of the Ministry of Agriculture and Livestock (MINAGRI) and the National University of Rwanda (UNR), but only helped in the diagnosis of diseases and the provision of vaccines by its veterinary laboratory of Rubilizi.

3.3.8 FARMING TECHNIQUES AND EXTENSION PROGRAMME:

- **Fight against erosion (LAE), farming techniques, fertilization of crops**: Many results were obtained on the LAE, farming techniques, crop rotation techniques and crop association, the use of organic and mineral fertilizers in different types of soil with special emphasis on acid soils. The characterization of the physical environment had produced valuable holistic information that certainly affect the current environmental changes. Which normal agricultural engineer would, for example, afford to ignore the fact that LAE by bench terraces is effective, and that if it is applied incorrectly, it can lead to the reduction of soil fertility, and in certain circumstances lead to the disaster of landslide, a phenomenon which is irreversible?
- **Plant pathology laboratories and laboratories for vitro culture** at PNAP-Ruhengeri and Rubona had allowed the treatment or the control of certain viral diseases namely in Potato and Banana.
- **Socio-economics: the study** of man in relation to his environment and his vital needs produced results that guided and allowed researchers to identify or review research topics.
- **Extension schemes**: technology transfer techniques, developed through the results of the socio-economy and characterization of the physical environment, had helped to provide to the agricultural extension projects high quality seeds, responding to consumer tastes and as well as appropriate farming techniques. These technological packages were offered, accepted generally, without any physical or police coercion.

In the area of farming techniques and socio-economy, ISAR was supported by GTZ (German Technical Cooperation Agency), FAO (Food and Agriculture Organization of the United Nations), UNDP, CIAT, USAID, etc.

Without being exhaustive, we wanted to point out some research results made by ISAR and which are sufficiently documented *(see note 16)*. RAB researchers can find methodologies that have helped achieve these results outlined above.
They can then be inspired to make any improvements or to start research based on new constraints or potential assets, as well as up-to-date research tools. Minister G. Mukeshimana is right to point out that agricultural research in Rwanda has declined, this is particularly so because it has ignored to take into account what has been achieved.

**It is not enough to blame RAB. Research requires lot and is expensive.**

The real question is: does research receive enough attention and adequate funding as well as scientific freedom to refer to the work done by researchers non-aligned to the RPF? Is research prioritising topics really geared towards meeting the needs of the farmer?

There is little doubt that the cutting of the budget will affect agriculture, already poorly funded, and the cutting will probably affect research also. And when one looks at the agricultural intensification programme: "Started in September 2007, the CIP programme focuses on six priority crops namely maize crops, wheat, rice, Irish potato, beans and cassava", however sweet potato, banana and sorghum are missing from the list. This leads to doubt whether RAB is keen to meet the needs of farmers. Indeed, apart from regions of high altitudes, these crops together with beans form the basic diet of the majority of Rwandans (pp 110-111). And it was even said in the Rwanda mythology, that the future king would be found with a sorghum seed in his closed fist at birth!

For maize, declared as priority in the monoculture programme, many local papers highlight that its price is not remunerative and does not even cover the cost of inputs. Thus, the farmer works at a loss, and has no many alternatives to meet the food needs of his family.

We reiterate that when a crop is imposed, economic logic requires that the consumer should have easy access to substitutes to what he does not produce or should have at least an income allowing him to buy foodstuffs that supplements what he/she produces. It all seems that this is not the case currently.

Mono-cropping can be an agronomically dangerous system, especially if done in succession without regard to crop rotation or fallow which is unlikely in Rwanda due to scarcity of land. How does the Ministry of Agriculture plan to provide to farmers an adequate and continuous food security without breaking the cycle of fungal diseases and pests that proliferate after successive mono-cropping of rice, potato, maize, cassava, etc.? There is enough reasons to fear for the future.
4. Conclusions

The Romans said that “you must feed the people and entertain them so that they don’t rebel”. If Rwanda wants to do the same with these 85% of Rwandan farmers and to live in peace with its 1.200.000 inhabitants, the RPF government has two logical and priority choices:

- Investing in agriculture to make it the engine of development and increase the food and income of rural farmers\(^\text{31}\)
- Developing simultaneously the other economic sectors to create employment in order to reduce pressure on agriculture.

That’s the priority sector where the RPF should put the funds that Rwanda receives from the international community\(^\text{32}\), the different contributions taken regularly from businessmen and the general population. It is not healthy nor sustainable for Rwanda to invest these financial resources in the huge salaries of parliamentarians and senior officials\(^\text{33}\), in overspending on multiple trips of the President abroad\(^\text{34}\) or in maintaining an oversized army\(^\text{35}\). The RPF should know that it is universally known that compared to war, dialogue is the cheapest option financially and in terms of saving lives.

To persist in wanting to import commodities to feed an estimated population of 12 million people, will eventually strangle the economy of Rwanda because the country has few export products to constitute enough foreign reserves\(^\text{36}\).

**It is too easy to blame the weather conditions.**

Appropriate agricultural policies should help the know-how of the Rwandan farmer. Indeed, over the years, he was able to overcome the climatic risks by diversifying the plant seeds, varieties and cultivars, and combining crops. A good government is one that respects its farmer / producer in his choices and economic behaviour, and who cares about the daily concerns of the governed and the food security of his family.

The research is only a mediator or a tool, through which technological packages are passed on to the farmer with a guarantee that they will profit him and hence makes it easy for him to accept and adopt them\(^\text{37}\). Getting results by coercion, fines, spoliation of land, etc. is inadequate and it needs to be recalled that the use of coercion by colonial administration always generated frustrations that led to bloody revolutions in the world.

Lastly, Rwanda should not have the luxury to redo the research for what has been done or is already known. Efforts should focus on improving existing results and resolving new problems.

5. Acknowledgements.

The author would like to express his sincere thanks to Dr Venant Rutunga, former head of the Department «Milieu et systèmes de production» (environment and farming systems) in ISAR and Regional Director of Rubona Research Centre, for reviewing and enriching this article.
L’investissement agricole » facilité par l’État au Rwanda : regroupement des terres, renforcement du contrôle par Chris Huggins

Official Gazette no Special of 16/06/2013:

Crop Intensification


- Rwandan children still forced into work, illegal activities instead of school; By EDMUND KAGIRE Rwanda Today; October 12 2012
- The Cost of Hunger in Africa: Rwanda 2013
- http://www.wfp.org/content/cost-hunger-africa-rwanda

Rwandan children still forced into work, illegal activities instead of school; By RODRIGUE RWIRAHIRA; November 7 2014


Children still face hardship despite Rwanda high ranking; By Joram Muhoozi; November 22 2013

http://www.theeastafrican.co.ke/Rwanda/News/Children-still-face-hardships-despite-Rwanda-high-ranking/-/1433218/2084268/-/3g05sz/-/index.html

Icyegeranyo cy’umuryango Global Hunger Index cyo mu mwaka wa 2012 cyerekana u Rwanda nka kimwe mu bihugu bifite ikibazo cy’ingorane zo kubona ibyo kurya bihagije; Ibiburutse kuvuguruwa: 25 ukwa cumi, 2012;


Ibuzima byugarije ubuhinzi bifite pa l’État au Rwanda : regroupement des terres, renforcement du contrôle par Chris Huggins ; Septembre 2013


- Nyabihu: Akareere gafatanje na RAB barimo gushakira umutu ikibazo cy’imbuto yibirayi June 5, 2013

- Colloque régional à Bujumbura décembre 1983.CRD
- Rapport du Séminaire

Le mouton local 1. Estimation de la production laitière et évolu

http://www.igihe.com/amakuru/uburezi/amashuri/article/nyamasheke

GISAGARA: Barasaba gushumbushwa vuba


Programme

Butare. Ngendahayo M 1980

Regional wheat workshop for Eastern, Central and Southern Africa, 1; Gisenyi, Rwanda; June 1980

- pota research and transfer of technology in Rwanda M. Bicamumpaka and S. Nganga : Proceedings of the Regional workshop , Addis-Ababa Ethiopia ; CIP- Lima 1982


- Rwanda Hit Surprisingly Bad by the ‘Green Revolution: February 17, 2016
- http://mobile.english.rfi.fr/africa/20160208-lalalala


PLAN STRATEGIQUE POUR LA TRANSFORMATION DE L’AGRICULTURE AU RWANDA; DOCUMENT PRINCIPAL ; MINAGRI 2004


- Colloque régional à Bujumbura décembre 1983.CRD/Canada

- Ibibuzima byugarije ubuhinzi bifite pa l’État au Rwanda : regroupement des terres, renforcement du contrôle par Chris Huggins ; Septembre 2013

- Rwanda Hit Surprisingly Bad by the ‘Green Revolution: February 17, 2016
- http://mobile.english.rfi.fr/africa/20160208-lalalala


- Nyabihu: Akareere gafatanje na RAB barimo gushakira umutu ikibazo cy’imbuto yibirayi June 5, 2013

- Colloque régional à Bujumbura décembre 1983.CRD
- Rapport du Séminaire

Le mouton local 1. Estimation de la production laitière et évolu

http://www.igihe.com/amakuru/uburezi/amashuri/article/nyamasheke

GISAGARA: Barasaba gushumbushwa vuba


Programme

Butare. Ngendahayo M 1980

Regional wheat workshop for Eastern, Central and Southern Africa, 1; Gisenyi, Rwanda; June 1980

- pota research and transfer of technology in Rwanda M. Bicamumpaka and S. Nganga : Proceedings of the Regional workshop , Addis-Ababa Ethiopia ; CIP- Lima 1982


- Rwanda Hit Surprisingly Bad by the ‘Green Revolution: February 17, 2016
- http://mobile.english.rfi.fr/africa/20160208-lalalala


PLAN STRATEGIQUE POUR LA TRANSFORMATION DE L’AGRICULTURE AU RWANDA; DOCUMENT PRINCIPAL ; MINAGRI 2004


- Colloque régional à Bujumbura décembre 1983.CRD/Canada

- Rwanda Hit Surprisingly Bad by the ‘Green Revolution: February 17, 2016
- http://mobile.english.rfi.fr/africa/20160208-lalalala


PLAN STRATEGIQUE POUR LA TRANSFORMATION DE L’AGRICULTURE AU RWANDA; DOCUMENT PRINCIPAL ; MINAGRI 2004

- Compte rendu du deuxième séminaire régional sur l’amélioration du sorgho et du mil en Afrique de l’Est; ISAR-CRDI-SAFGRAD/ICRISAT; novembre 1984
- Yield levels of potato crops in central Africa. Agricultural systems; Haverkort A 1986
- Improvement of Sweet Potato in East Africa ; CIAT-CIP-IITA; 1988
- Indigenous African small ruminant strains with potentially high productive performance. Small ruminant research; Wilson R T, Murayi T and Rocha 1989
- Actes du Sixième Séminaire Régional sur l’Amélioration du Haricot dans La Région des Grands Lacs ; Kigali, Rwanda ;1991
- Progress de la recherche sur les plantes a racines et tubercules au Rwanda. Ndamage, G., Ntwawuruhunga, P. and Mulindangabo, J ; 1992 ISAR, Butare; CRM, IDC, Ottawa, Canada.
- L’agroforesterie et la GCES au Rwanda ; Comment restaurer la productivité des terres acides dans une région tropicale de montagne à forte densité de population? Cah. Orstom, sér. Pédal., vol. XXVIII, no 2, 1993
- Contribution de la production et de la commercialisation du blé à l’augmentation des revenus des petits paysans des régions de haute altitude du Rwanda; Munyemana A 1995; These de doctorat. Universite Hohenheim, Stuttgart.
- L’agroforesterie, la fertilisation minérale et la GCES au Rwanda; Eric Roose, Directeur de Recherche en Pédologie, ORSTOM, Montpellier, France ; François Ndayizigiye, Géographe chercheur, ISAR, Station Rubona, Rwanda ;
- Agroforestry, water and soil fertility management to fight erosion in tropical mountains of Rwanda. Soil Technology; Ndayizigiye F and Roose E 1997
- La Pomme de terre au Rwanda: Une analyse d’une filière a hautes potentialités : Munyemana A et von Oppen M ; Centre International de la Pomme de Terre, CIP-Lima-Perou ; 1999
- Les plantes cultivées en régions tropicales d’Altitude d’Afrique ; Nyabyenda P ; CTA 2005

1http://www.umuhinzi.com/
http://www.kigalitoday.com,
http://izubarrashe.rw/

18 Rwandan agricultural policies hurting the poorest of the poor: study
http://m.en.rfi.fr/africa/20160208-Rwandan-agricultural-policies-hurting-poorest-poverty-study

19Official Gazette no Special of 16/06/2013;
Itegeko n. 43 ryu ku wa 16/06/2013 rigenga ubutaka mu Rwanda; kuva ku ngingo 52 kugeza ku ngingo 63
20l’investissement agricole » fait par l’État au Rwanda : regroupement des terres, renforcement du contrôle par Chris Huggins; Septembre 2013

21Bimwe mu ibazo bigaragara mu mwuga w’ubuhinzi muri iyi miinsi bikomoka ku ruhererakanje rw’ibintu byinshi birimo imihindagurikire y’ibihie n’ubushakashatsi muri iyi ngeri bwasubije inyuma. Iyi mpamvu yiyongeraho kuba nyuma y’uko Ikigo cy’Ubushakashatsi mu by’Ubuhinzi (ISAR) isimubwe n’icyigo cy’Ighigu cy’Ubuhinzi n’Ubworoz (RAB), ubushakashatsi bwasubije inyuma...”
Arongera ati “ ”Ubushakashatsi bwabaye nk’ubugana hasi cyane. Ibibazo turi kubona byinshi ni umusaruro mu cyw asigaye ku byo ISAR yasize. Bivuga ko RAB itabashije gutubura imbuto, ngo ikore imbuto nshya, ikore inyongeramusaroro, hanyuma inakore ubushakashatsi ku ibibazo turi guhura na byo, bityo itange ibisubizo...”

http://mirisire.com/amakuru-yose/hirya-no-hino/mu-rwanda/article/abahanga-mu-rwanda-baranenga-leta-kudaha-agaciro-
ubushakashatsi-bwabo
24http://www.cgias.org/cgias
A leader who travels a lot probably does not need you so much; By FRANK KAGABO; October 17 2014 

http://www.theguardian.com/world/commentisfree/2016/jan/03/paul-kagame-and-others-damage-africa-lust-to-rule-for-ever

The Observer view on Rwanda and Paul Kagame’s lust for power; 3 January 2016


Panama papers: les jets privés du monarque Kagame et son pillage du patrimoine rwandais


Rwanda : la valeur des actifs extérieurs nets des banques commerciales a baissé de 70% en 2015 à 40 millions $ ; Idrss Linge ; 14 mars 2016


http://www.thenetimes.co.rw/section/article/2016-03-09/197812/

See also comment: “Whatever way you choose to look at it, it cannot be other than a disaster in the making that we consume so much from outside than we are able to fund through our own sales beyond our borders. This is simply not sustainable. And don’t let us compare the potential dangers of our deficit to that of the US…”

Commission Nationale d’Agriculture

- Volume I : (1) Allocation et Exploitation des Terres de Marais; (2) Le Terrassement pour la Conservation des Solis; (3) Les Cultures Associées ; Novembre 1990;
- Volume II : Appuis à la production agricole ; Analyse du Sous-Secteur des productions animales ; Avril 1991
- Volume III : Productions Agricoles du Rwanda ; Zones agro-climatiques du Rwanda ; Juin 1991
- Volume IX : La Commercialisation des Produits Agricoles au Rwanda : Février 1992
- Volume VI : Décembre 1991: (1) Le Sous-Secteur Forestier; (2) Développement des Ressources Halieutiques.
- Rapport préliminaire de synthèse : 1992