TRANSPARENCY INTERNATIONAL RWANDA

GOVERNANCE SYSTEMS OF AGRICULTURAL AUTHORISATION PROCESSES

How Loopholes in Service Delivery Regulations Affect Agricultural Development

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Transparency International Rwanda (TI-Rw) is a Non-Governmental Organization (NGO), registered in Rwanda as a non-profit organization according to the Rwandan law. It was created in 2004, with the mission "To contribute in the fight against corruption and promoting good governance through enhancing integrity in the Rwandan society". TI-Rw is a leading anti-corruption actor in Rwanda; it is increasingly being seen as a reliable partner by the government of Rwanda, the private sector, development partners and other fellow CSOs. Furthermore, since 2011, TI-Rw is a national chapter of Transparency International, the global movement fighting corruption with over a hundred national chapters worldwide and a coordinating Secretariat located in Berlin, Germany

Author: Transparency International Rwanda, February 2019

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Executive summary

Agricultural development is key to food security and poverty reduction in many parts of the world. In the agricultural sector, good governance can enhance agricultural growth and can have impact on agricultural based economies, such as in Rwanda. Small-scale farmers in some developing countries and particularly in Rwanda, often receive low prices for their produce. This challenge is mainly due to gaps in the provision of extension services, low farming skills among some famers and insufficient post-harvest handling facilities. Some of these challenges are then reinforced through in-transparent or too complex governance practices. Transparent governance mechanisms in agriculture would for instance determine responsibilities for specific services, the criteria to get the service, or requirements and process to get relevant authorisations. Absence of effective governance system in any economic sector like in agriculture is likely to induce poor service delivery, corruption and adverse effects on farmers' business and family livelihoods.

As far as good governance in the agricultural sector is concerned, the Suggestion Box Analysis and Rwanda Bribery Index conducted by Transparency International Rwanda in 2017 and further exploratory interviews conducted by the same organisation, showed that some of the basic services in the agricultural sector, that are crucial for the functioning of the value chain, are characterised by loopholes in the regulatory framework. Loopholes in the governance of value chains, provide room for corruption and malpractices. So far, according to TI-RWs' knowledge, no study has been conducted that specifically addresses loopholes in agricultural governance practices, which addresses the need of about 80 % of the population who lives in the rural areas of Rwanda. This study aims to examine the governance mechanisms of the authorisation process in agriculture and effects of existing loopholes on farmers' business development. In 2018, TI-RW conducted a quantitative survey in 12 Districts in Rwanda and several focus group discussions as well key informant interviews to generate robust evidence on this topic.

The evidence that TI-RW gathered showed several room for improvements. Access to seeds, fertilizers and pesticides (availability and cost) stand among major issues faced by farmers at the planting stage. As far as rice planting is concerned, it emerged from discussions in FGDs that sometimes there is delay to begin the planting campaigns (by sector/district agronomists as well as agronomists from Rwanda Agriculture Board (RAB). For example, normally Season A starts on 1st July but it started in September. Such delays have severe consequences on the quality of rice. Sector agronomists who were interviewed in this study claimed that the delay is often caused by RAB agronomists, who do not provide seeds and fertilizers on time.

Another interesting issue is the missing right of farmers to use a certain share of the harvest for subsistence, this is largely experienced especially for maize and rice farmers. Participants in FGD mentioned that for rice, farmers have to take the entire harvest to the crop collection centres, and have a right to 20kg (processed by agro-dealers) for household consumption. However, in practice, such a portion of rice is not often provided because when farmers are not able to hit the production target (fixed by both cooperative leaders and agro-dealers) then they are not allowed to get the portion in question.

Authorization to harvest crops came out to be an important issue affecting farmers, especially potatoes farmers in northern Rwanda. While efforts done by researchers to see if there exist formal written guidelines on requesting and issuing authorizations to harvest were vain, both farmers and cooperative managers who were interviewed in this study, asserted the authorization process is done verbally. Farmers inform their respective cooperative leaders that their crops are ripe and wait until the latter leaders issue a verbal authorization. The data suggests that failure to secure harvesting

authorization has serious repercussions to famers. In the few cases whereby permissions were not eventually issued, affected farmers either bribed, kept waiting until the crop perished or simply took the risk of harvesting without permission. All these behaviours constitute a heavy burden for affected farmers.

The process of applying for and getting harvest and livestock authorizations proves to be very largely bribe free. The survey suggests that the incidence of bribe encounter for the three crops considered together stands below 1%. This is very encouraging given that it is the first time that incidence of corruption (mainly bribe) has been that low in Rwanda.

The data suggests that payment for crops sold be cooperative members is ultimately done for the large majority of respondents. Around 8 in 10, 7 in 10 and 10 in 10 farmers who sold their maize, rice and Irish potatoes crops respectively, eventually got the payment, though with delays for some farmers. However, the data shows a significant share of farmers who did not received payment at all. This concerns rice and maize farmers only. Discussions in FGDs and KIIs concurred with this finding and advanced that such a lack of payment is mainly caused by the fact that sometimes the rice and maize crops sold by farmers does not meet minimum quality standards for commercialization purposes.

In the livestock sector, governance mechanisms are different from the crop sector. Here, the local government plays a crucial role in delivering services. Overall the survey suggests high and very high levels of respondents' satisfaction with the services received from both veterinarian and agronomist service providers. With regard to the level of satisfaction of the most requested services (chemical fertilizers and treatment for plants improved variety of seeds), satisfaction stands high with 78.1% and 78.2%, respectively. Overall, such high levels of respondents' satisfaction imply quality services received by applicants and may be considered as a good indicator of minimized likelihood of bribe. However, such levels of satisfaction are far from being optimal and therefore call for improvement. For example, in some locations in the Eastern Province, participants complained that while authorization for selling cattle is secured, they are obliged to pay taxes even when the cattle were not eventually sold.

Another challenge for farmers was determined with regard to cost of veterinary transport (without fixing the amount) to deliver the service (if it is provided out of service). It emerged from FGDs that due to the insufficiency of official veterinaries (there is only one at sector level), farmers resort to the service of independent veterinaries who appear to be more available than the former. However, the latter veterinaries are more expensive than the former. Further, interviewees highlighted that in most of cases, the transport proves to be costly because sectors area is quite large, so that farmers living close to the sector offices are better off as they are charged less money. Further, the data shows an important proportions of respondents (around 20% cumulatively) who received the service with delay (beyond one day).

Overall, the findings call for 1) changes in the governance of authorizations to ensure that farmers are aware of the requirements for crop harvest and sale authorizations, one the one hand, and 2) that authorizations are timely issued to applicants who qualify, on the other hand. Further, cooperative leaders should encourage their members to endeavor to meet the requirements prior to filing their applications for authorizations. As the cooperatives and agro-dealers play a more and more important role in the development of the value chains of the three crops, this results calls for re-thinking the development, role and responsibilities of cooperatives and agro-dealers to improve the services provided to farmers.

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Background

Agricultural development is key to food security and poverty reduction in many parts of the world. In the agricultural sector, good governance can enhance agricultural growth and thus, can have a tremendous impact on agricultural based economies, such as in Rwanda, where agriculture is the backbone of the economy and employs over 70% of the population (National Institute of Statistics of Rwanda, NISR, 2016). In 2017, it contributed to 31% to the GDP (NISR, 2018).

The Government of Rwanda (GoR) also considers agriculture as an important driver of economic development and set it as a pillar of Rwanda's Vision 2020 and a core component of the rural development (one of the 4 thematic and priority areas) of Economic Development and Poverty Reduction Strategy (EDPRS) II. Especially with regard to the low productivity and shortage of fertile land, the GoR is pushing for new policies and strategies. For example, in 2008 the Government launched the Land Use Consolidation Program as a strategy to increase agricultural productivity. As the Ministry of Agriculture and Animal Resources (MINAGRI) puts it "land consolidation has always been regarded as an instrument or entry point for efficient utilization of farm lands" and "given the dependence of large population on farm lands for living, consolidation of land use patterns is more rational and tangible than physical consolidation of farm lands" (2012, p. 6). Furthermore, the Government of Rwanda promotes the cooperative framework through which various small and medium economic operators run their businesses including agriculture. A study conducted by MINAGRI (2012, p.37) on farm land use consolidation in 2012 recommended to "develop bargaining skills of producers by setting up cooperatives in new consolidated areas, and inculcating organizational, business and managerial skills". In many regions across the country, farmers therefore operate through cooperatives especially those growing Irish potatoes, rice, maize, bananas and cassava, as well as raising livestock.

Small-scale farmers in some developing countries and particularly in Rwanda, often receive low prices for their products. This challenge is mainly due to gaps in the provision of extension services, some low farming skills among some famers and insufficient post-harvest handling facilities, failure to meet the established quality standards and end up being sold at lower prices (RCSP, 2018: 22). To mitigate this challenge, the government of Rwanda, through the Ministry of Trade and Industry and other partners play a critical role in developing the different stages of the value chains to support farmers such as provision of seeds and fertilisers, drying and storage facilities to farmers on subsidized prices, availing to farmers private buyers who offer relatively higher prices.

However, the agricultural sector in Rwanda still faces many challenges, such as low productivity, shortage of fertile land, post-harvest losses, and lack of capacities of modern farming practices. With this, the agricultural sector is still lagging behind the foreseen development, especially with regard to the effectiveness of these strategies. Some of these challenges are then reinforced through in-transparent or too complex governance practices. Transparent governance mechanisms in agriculture would for instance determine responsibilities for specific services, the criteria to get the service, or requirements and process to get relevant authorisations, such as for harvesting or selling crops. Absence of an effective governance system in any economic sector like in agriculture is likely to induce poor service delivery, corruption and adverse effects on farmers' business and family livelihoods. For example, the development of value chains also depends on the existence and enforcement of governance mechanisms which govern the entire production, harvest, selling as well as marketing chain, where farmers and many other stakeholders along the value chains are involved. However, as far as good governance is concerned, the Suggestion Box Analysis and Rwanda Bribery Index conducted by Transparency International Rwanda in 2017 and further exploratory interviews conducted by the same organisation, showed that some of the basic services in the agricultural sector, that are crucial for the functioning of the value chain, are characterised by loopholes in the regulatory

framework. Loopholes in the governance of value chains provide room for corruption and malpractices, from which mostly the rural population, the small-scale farmers, have to suffer from. Besides technical challenges, the agricultural sector faces a number of institutional challenges including corruption, nepotism, bureaucracy and negligence of duty. Corruption in agricultural production causes problems for farmers worldwide. The corrupt practices in agriculture sector may happen through the channels of land title and tenure, credit availability, quality and distribution process of supplies (seeds, fertilizers, pesticides, and equipment), water allocation, marketing, and development of agribusinesses. Here, especially the distribution process of fertilizers is often considered as being very prone to corruption. The creation of market imperfection by dealers of fertilizers and other inputs allows them to take more profit through the high price they charge farmers and this leads to the low performance of agriculture sector (Fink, 2002).

So far, according to TI-RWs' knowledge, no study has been conducted that specifically addresses loopholes in agricultural governance practices, which addresses the need of about 80 % of the population who lives in the rural areas of Rwanda. In order to strengthen the upward accountability mechanisms, promote good governance in all sectors of society and levels of administration and contribute to an effective decentralization process, TI-RW wants to investigate the specific gaps in current agricultural governance mechanisms and thus give citizens a voice to raise their issues. In this regard, TI-RW, with the support of the GIZ Decentralization and Good Governance Program, conducted a research in 2018 on the governance system of authorisation in agriculture sector affecting agricultural development.

Study objectives

The study aims to examine the governance mechanisms of the authorisation process in agriculture and effects of existing loopholes on farmers' business development.

The specific objectives of this proposed study are:

1. To analyse the current governance mechanisms of agricultural authorisation that are faced by farmers (planting, harvesting and selling)
2. To determine the prevalence of corruption and other malpractices in the above mentioned authorisation processes (evidence and perception) as reported by farmers
3. Identify and analyse major loopholes in agricultural production process (planting, harvesting and selling)
4. To assess the effects of corruption and loopholes on farmers' welfare and on their business (agriculture)

Methodology

Approaches and methods

As mentioned above, the purpose of this research was to examine the governance mechanisms of the authorisation process in agriculture and effects of existing loopholes on farmers' livelihood.

This research used a mixed method approach of qualitative and quantitative methods to get both farmers' perceptions of and experiences with the authorisation process. This approach allows us to analyse in a more comprehensive way, where qualitative findings are used to complement the quantitative information. The quantitative data collection included a standardized questionnaire administered to farmers from 12 districts of Rwanda. The qualitative data collection included mainly key informants' interviews (KIIs) at district and national level and focus group discussions (FGDs) with farmers. This gave the opportunity to gain further insights and to understand reasons behind some issues as well as motivations that are not captured with the survey data. The qualitative data was collected at the level of service providers as well as service seekers (sector officers, agronomists at sector level, presidents of cooperatives and farmers).

Sampling frame and sample size

The study population consisted of maize, rice, irish potatoes farmers grouped in cooperatives as well as livestock keepers, based in 12 districts. Based on the 2017 Seasonal Agricultural Survey (NISR, 2018), the 12 districts were selected on the basis of the area of cultivation of at least 2 crops or all the 3 crops of focus for this study as mentioned above. The table below provide the study population distribution by district and type of crop.

Table 1 Selection of districts by cultivated area and type of crops (maize, rice and irish potato)

Province	District	Area(In Ha)		
		Maize	Rice	Irish Potato
Southern	Gisagara	6,079	1,325	302
	Huye	2,129	1,233	411
	Ruhango	1,386	67	401
Eastern	Nyagatare	30,045	497	1,479
	Kayonza	14,003	343	1,639
	Kirehe	17,122	112	963
Northern	Musanze	5,993	-	5,571
	Gakenke	9,716	-	2,119
	Gicumbi	5,682	-	4,851
Western	Rusizi	5,642	617	116
	Ngororero	4,393	-	2,257
	Nyabihu	2,235	-	7,370

The study population is comprised of independent farmers (EICV4, Thematic Report-Economic activity, 2016) operating in the 12 districts as follows:

Table 2 Number of independent farmers in the selected districts

Province	District	Number of independent Farmers[1]
Southern	Gisagara	165,438
	Huye	138,470
	Ruhango	162,794
Eastern	Nyagatare	159,139
	Kayonza	135,099
	Kirehe	159,817
Northern	Musanze	178,001
	Gakenke	162,611
	Gicumbi	240,171
Western	Rusizi	158,917
	Ngororero	166,911
	Nyabihu	145,707
TOTAL		1,973,075

The sample size is computed on the basis of various parameters such as the desired degree of

n = (N(zs/e)2)/(N-1+(zs/e)2) Where:

z= 1.96 for 95% level of confidence

s = p(1-p) p = estimated proportion

e = desired margin of error

N = population size

In this estimation the significance level 95% with a margin of error of 2 % is taken. Such a sample size provides a base for meaningful comparison to undertake statistically valid sub stratifications that fall within acceptable confidence level. Based on the above formula the sample size for the survey is 2398 respondents rounded to 2400.

[1] EICV4 Thematic Report-Economic activity, 2016, p72.

Table 3 Distribution of sample by District

Province	District	Study Population	Sample
South		466,702	**570**
	Gisagara	165,438	**200**
	Huye	138,470	**170**
	Ruhango	162,794	**200**
West		471,535	**570**
	Rusizi	158,917	**190**
	Ngororero	166,911	**200**
	Nyabihu	145,707	**180**
North		580,783	**705**
	Musanze	178,001	**215**
	Gakenke	162,611	**200**
	Gicumbi	240,171	**290**
East		454,055	**555**
	Nyagatare	159,139	**195**
	Kayonza	135,099	**165**
	Kirehe	159,817	**195**
Total		**1,973,075**	**2400**

With regard to the selection of respondents, sector agronomists shared the lists of cooperatives and contacts of the cooperative presidents from which respondents/farmers were randomly selected. While the questionnaire was distributed to farmers, the interviews were conducted with agronomists and president of cooperatives at the crop selection centres (irish potatoes and maize) and in plantation fields for rice. With regard to the number of FGDs and key informants' interviews conducted, one FGD was conducted with farmers in each category of crops in one district per province (maize, maize and rice). Additionally, 5 interviews were conducted in one district per province with the following officials: one agronomist at sector level, 1 president of a cooperative for each of the three types of crops. All in all, 12 FGDs and 20 KIIs were conducted.

Data collection

Before the data collection process has started, a "pilot survey" was organized in a sector other than those which was covered by the actual survey. The pilot survey allowed testing the research tools with regard to the clarity, wording, coherence and consistency of the questions. It will also serve as an opportunity for interviewers and supervisors to get used to the tools they will have to use during the actual survey.

The data collection was carried out by skilled interviewers and team leaders recruited and trained to this end. The training covered issues such as survey methods, questionnaire structure and content, interviewers'/ supervisors' responsibilities, as well as on survey ethics.

While the survey was conducted by enumerators under close supervision of field team leaders, the FGDs and interviews were facilitated by TI- RW's researchers as this exercise requires more expertise

in conducting qualitative data and in-depth understanding of specific techniques especially when it comes to probing questions and investigating more on testimonies. Local focal points were recruited to select and invite participants as well as the venue for FGDs. Criteria for selection of participants included being a farmers' cooperative member, growing maize, rice or irish potatoes depending on crops grown in the area, gender inclusion, … Each FGD included between 10 to 15 farmers and lasted around 60 minutes.

In a bid to ensure data quality, the data collection activity was supervised by skilled supervisors and team leaders. Supervisors include researchers while team leaders were recruited based on their experience in carrying out such exercise.

Quality control

For data quality control purposes, the following measures were taken:

- The survey protocol was reviewed and approved by the National Institute of Statistics of Rwanda;
- Skilled enumerators and field team leaders were hired and trained on the survey objectives, data collection methods and related ethics as well as the content of the questionnaire;
- The questionnaire was tested (piloted) and adjusted accordingly prior to actual administration;
- The data collection was closely supervised by field team leaders;
- The national coordinator of the study monitored the data collection activity
- SPSS software was used for both data entry and data analysis and therefore minimized the errors in data processing

Governance mechanisms in the Rwandan agricultural sector

Agriculture in Rwanda –key facts

The agricultural sector is crucial for Rwanda's economic growth and reduction of poverty. It serves as the backbone of the economy and accounts for 39 percent of the gross domestic product (GDP, 481 billion RWF in 2nd quarter of 2018), 80 percent of employment, 63 percent of foreign exchange earnings, and 90 percent of the country's food needs (World Bank, 2013). The agricultural sector remains to be the second most important sector that contributes to Rwanda's economic growth after the service sector.

The agricultural sector is dominated by small, subsistence farming under traditional agricultural practices and rain-fed agriculture. The average plot size dropped from 2 ha in 1960 to only 0.35 ha in 2007 (Van Oosten et al. 2018). The most productive crops are plantains, cassava, potatoes, sweet potatoes, maize and beans. These outputs are mainly for subsistence, and only a minor share, especially in terms of tea and coffee production, are for exports (Hashim Al., 2017). Especially considering the scarcity of fertile land and at the same time the continuous population growth, soil erosion, poor water management, limited access to input and output markets, weak processing capacities agricultural development is very much challenged. Further, climate change effects are already putting the agricultural production under risks due to weather related shocks. As a result, average crop yields are low compared to potential yields (Giertz et al. 2015), which is challenging food security and income especially in the rural areas. "The country's average annual income of $550 per capita reflects a rural poverty rate of 49 percent, a figure that soars to 76 percent for families whose main source of income is agriculture" (World Bank 2013). According to the Livestock Master Plan, also the livestock sector is lacking behind its potential in terms of productivity, although the "One Cow per Family" program has very much contributed to increase the productivity of livestock products. One side effect of this program was also increased soil fertility due to the application of livestock manure on the soils.

Agricultural governance system in Rwanda

The agricultural sector is one of the most hopeful instruments for reducing poverty and securing local livelihoods. However, one of the success factors are good governance structures and appropriate related policies in place as well as laws and rules at all levels of administrative system in order to prevent and mitigate corruption risks that may constrain the overall agricultural growth and added value.

Governance is the style of exercising power to socially and economically manage the country's resources for development (ADB, 1995). Further, it is defined as the "process of decision-making and the process by which decisions are implemented or not" (UNESCAP 2009). With this, good governance has a number of preconditions, such as political stability, the rule of law, voice and accountability, integrity, governments, regulatory quality and pro-active measures for anti-corruption (UNEP 2008). Also in the agricultural sector, the dimensions of good governance and related policies are of paramount importance. Thus, agricultural governance becomes part of the increase of growth and development of a countries' agricultural sector (FAO 2011). Weak governance in agriculture would include policy failures or lack of capacities, in-effective functioning of institutions, missing scientific innovations, no active participation of all involved stakeholders, corruption encounter. On the long term, weak governance and increased corruption would then allocate resources unfair and in-

effectively, which then impact on the economic efficiency, social equity as well as environmental sustainability.

What is also important to note, good agricultural governance system not only includes the agricultural sector per se, but also related sectors and resources, such as at least land management policy/good land governance, equal access to the public goods and services related to the agricultural sector such as fertilizers, irrigation equipment and distribution of improved seeds to farmers, and water integrity. All of them being essential inputs for agricultural productivity.

STAKEHOLDERS RELEVANT FOR AGRICULTURAL GOVERNANCE IN RWANDA

In most of the countries, the government executes the functions of agricultural governance through the public sectors' administrative system, structured in the agriculture ministry and departments that play overlapping responsibilities in order to provide successively public goods and services associated to the agricultural sector. This is also the situation in Rwanda, where however, the agricultural sector is also, as well as other sectors, undergoing some decentralization processes.

Since 2000 up to now, the implementation of decentralization policy has paid more attention on local governance and decentralized services delivery as one of key drivers of economic growth and development in Rwanda. Through this policy every sector in Rwanda is managed from the line ministry to the sector level in order to allow local citizens to access needed services as well as to provide their feedback and ideas to the higher administrative level.

Figure 1 illustrates the complexity of the agricultural stakeholder landscape in Rwanda. The agricultural sector is mainly administered by the Ministry of Agriculture and Animal Resources (MINAGRI), whose role it is to develop and increase the potential/productivity of the animal and farming sector, to reduce poverty and ensure food security. At the technical and operational level, Rwanda Agriculture and Animal Resources Development Board (RAB), who is in charge of "championing the agriculture sector development into a knowledge based, technology driven and market oriented industry, using modern methods in crop, animal, fisheries, forestry and soil and water management in food, fiber and fuel wood production and processing". At local government level, the implementation of agricultural policies is carried out by both district and sector authorities. Service charters were established to guide related service seekers that are provided by agronomists and veterinaries. District and sector service charters outline the type of services provided at the respective level, the citizens eligible for the service, the title of staff providing the service, the service requirements, the cost of the service, the time taken to get the service, as well as the days on which the service is provided. The list of services provided in Table 5.

Further, at policy level, the Ministry of Commerce, Trade and Industry and here specifically through Rwanda Cooperative Agency (RCA) at the operational level, is in charge of all cooperative related activities, especially the authorization of cooperatives (not only agricultural cooperatives) are provided.

In addition, as land is a key input for agricultural practices, also the Ministry of Environment is through the Rwanda Land Management and Use Authority (RLMUA) as well the Rwanda Natural Resources Authority (RNRA) also involved in the land sector. RLMUA is responsible efficient system of land administration, use and land management. And RNRA in charge of land and mapping, integrated water resources, geology and mines, as well as forestry and nature conservation. Some of their services provided to citizens, that are relevant for farmers, include for example:

- Resolution of complaints or conflicts related to land ownership
- Certificate of guarantee (land mortgaging)
- Land transfer by succession on land rights
- Certification of property ownership
- Lending a land title for bank guarantee
- Registration of unregistered land

Besides the public sector, also many CSOs and development partners contribute to develop the agricultural sector, e.g. improving access to seed and fertilizer markets, agricultural extension services, access to output markets. Some projects also focus on strengthening the private sector in agriculture. Especially with regard to mechanized farm operations and processing of agricultural goods, the private sector is still below its potential. An increase of private investment in upgrading agricultural value chains as well as encouraging private sector growth and competitiveness is very much needed.

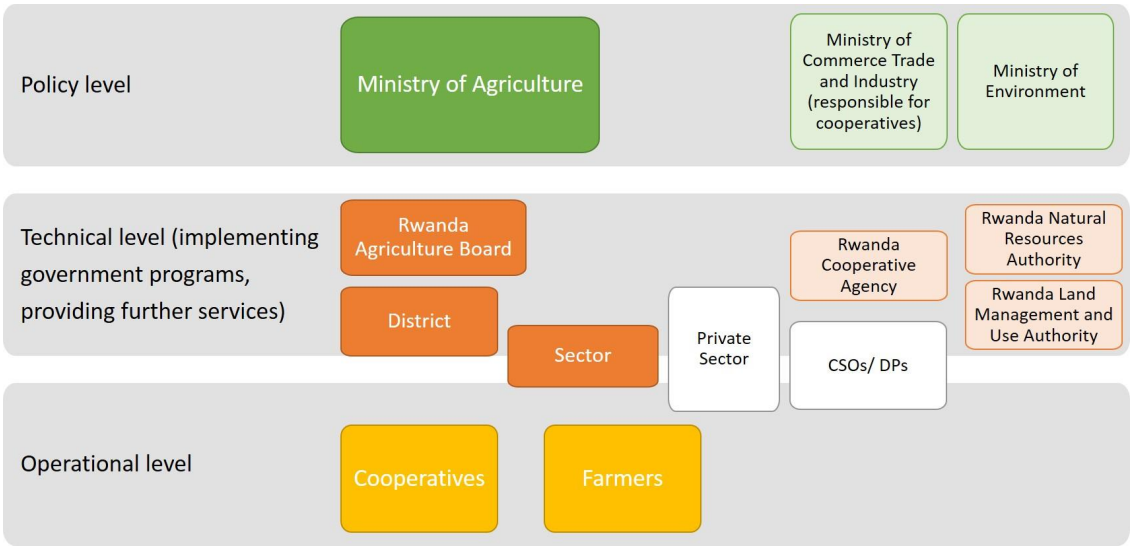


Figure 1 Main stakeholders in the agricultural sector in Rwanda

AGRICULTURE GOVERNANCE EXAMPLE 1: THE CROP INTENSIFICATION PROGRAM IN RWANDA

In 2009, the Government of Rwanda started with the implementation of several large-scale land and agricultural reforms to transform the rural system to a commercially oriented sector/professionalization of farmers. Recently, the government of Rwanda has made agricultural development a priority and allocated significant resources to improving productivity, expanding the livestock sector, promoting sustainable land management, and developing supply chains and value-added activities. One of the most recent and so far also largest government programs, aiming at increasing the productivity of Rwanda's agricultural sector, is the Crop Intensification Program (CIP), implemented by MINAGRI. CIP aims to accomplish to increasing the production of food crops across the country. CIP currently undertakes a multi-pronged approach that includes facilitation of inputs (improved seeds and fertilizers), consolidation of land use, provision of extension services, and improvement of post-harvest handling and storage mechanisms. The CIP program focuses on six priority crops namely maize, wheat, rice, Irish potato, beans and cassava. The crop intensification program paid more attention on these crops as they are the main food crops in Rwanda. Under this program, the farmers are organized in way the cultivation of crops in lands are consolidated and rearranged to form larger and more rational holdings (MINAGRI, 2007).

As a result, the crop productivity has increased. For example, the production of maize and wheat has increased 6-fold, and that of Irish potato and cassava has tripled. The production of rice and beans has increased by 30% in the past 4 years. These outputs have pushed Rwanda to the verge of becoming a food secure country (MINAGRI, 2011).

Engaging more efforts by the government of Rwanda to increase the production for selected food crops through sustainable crop intensification program, production will enable Rwandan farmers to

move further beyond from ensuring food security to become a food supplier at regional level during by 2020. More than the subsistence production allows farmers to earn an extra income that helps them to satisfy other daily and long term needs.

According to van Oosten et al (2019), some loopholes of this policy exist. For example, this type of regional agricultural specializations and intensification has forced farmers "to concentrate on one crop, which has made them dependent on markets, as they are no longer able to grow their own food crops" (van Oosten et al 2019). Further they describe a specific case of challenges faced in Rulindo, where farmers are not allowed to cultivate in a mixed cropping system, which, according to the authors van Oosten et. al (2019) would effectively help farmers to sustain their household food security. In addition, van Oosten et al (2019) mentioned that challenges also come up for private companies, "which are prevented from innovating their production systems and from meeting demand by introducing alternative crops and cropping patterns".

The figure bellow highlights the results of more efforts engage by Rwanda in order to increase the crop production.

Table 4 Estimated production values in metric tons (MT) 000s

	EICV3	EICV2
Crop	Estimated quantity of harvest (MT, 000s)	Estimated quantity of harvest (MT, 000s)
Maize	**294**	**94**
Sweet potato	1,005	1,287
Irish potato	**463**	**227**
Cooking cassava	220	445
Cassava for flour	226	-
Cassava leaves	26	26
Sorghum	167	159
Wheat	8	7
Rice	**35**	**19**
Cooking banana	500	445
Beer banana	537	855
Banana fruits	117	116
Cabbage	71	63

Source: NISR, EICV3, Thematic Report, Agriculture, January 2012

AGRICULTURE GOVERNANCE EXAMPLE 2: LIVESTOCK MASTER PLAN TO IMPROVE THE LIVESTOCK VALUE CHAINS IN RWANDA

As mentioned before, also the livestock sector is challenged and yields, especially in milk production, are below its potentials. With a new Livestock Master Plan, which is part of the new Strategic Plan for Agriculture Transformation (PSTA4), the commodity value chains should be reformed and improve the governance of the livestock value chains (ILRI 2017). The key value chains addressed here are:

- Cow dairy
    - Improved family dairy (IFD): smallholder family dairying practiced in all zones, usually with 1 - 2 milking cows and improved with crossbreds or exotics, along with improved feed and health services

  - Commercial specialized dairy (CSD): both the grazing based (i.e., Gishwati) and non-grazing based or stall fed (all zones) commercial scale specialized dairy production systems with high level of inputs and high milk productivity or yields.
- Red meat (and milk) from cattle, sheep, and goats
  - Improved family red meat
  - Ranches
  - specialized fattening or feedlots (CSF)
- Chicken meat and eggs
  - Improved family chicken
  - Commercial specialized chicken
- Pork
  - Improved traditional system
  - Commercial specialized piglet fattening

For example, with regard to the pig industry, the target is to raise pig meat production from 19 945 tons annually to 67 076 tons by 2022 or milk production to be increased from 816 million litres per year to 1.2 billion litres. However, these targets can be only achieved if a certain infrastructure and access to services is set. For example, in Eastern province, especially in the dry seasons, access to water is difficult or the transport of milk to processing companies is still a challenge.

AGRICULTURE GOVERNANCE EXAMPLE 3: AGRICULTURAL SERVICES PROVIDED THROUGH DISTRICT AND SECTOR SERVICE CHARTERS

Services relating to crops and livestock are provided mainly by local government entities such as districts and sectors as well as farmers' cooperatives and sometimes, depending on the crop, also from agro-dealers. The table below summarizes core services provided at both district and sector levels in both crops and livestock areas. It shows the services, the providing authority, the timeframe, corresponding costs as well as service associated with authorization provision. Only in the livestock sector, for four (4) services, an authorization is needed by local authorities. There is no authorization needed by the local authorities in the crop sector. Although there is no formal authorization process determined from local authorities, previous research of TI-RW (Suggestion Box 2017, RBI 2017) has shown that farmers need authorizations especially for harvesting and selling the crops[2]. Interviews with officials from Ministry of Trade and Industry (MINICOM), Rwanda Agriculture Board (RAB) and Rwanda Cooperative Agency concurred on the fact that there is not such an authorization framework that is officially established. They therefore suggested that there was ongoing effort to take up this challenge.

Table 5 Agricultural services provided through service charter

Area	Service	Service provider	Time taken	Cost	Authorisation involved
Crops	Farming related-technical advice	Sector agronomist or veterinary	Same day	None	No
	Request for plant seeds	In charge of forestry (sector level	Tree planting season	None	No
	Request for crop seeds	Sector agronomist	Same day	Depends on type of seeds	No
	Plants treatments and fertilisers	Sector agronomist	Same day	Purchased from authorised agro-dealers	No

[2] Harvesting and selling Irish Potatoes, Harvesting, transportation and selling own planted forestry, ...

	Technical farming advice	Sector agronomist	Same day	None	No
	Technical farming advice	District agronomist	Same day	None	No
	Settling disputes pertaining to natural resources and environment	Sector agronomist	One week	None	No
	Forestry-related technical advice	Sector agronomist	Same day	None	No
	Provision of seeds and fertilizers	District agronomist	Same day	Fertilizers (50% of the price), seeds (25% of the price)	No
	Technical advice on agriculture-related project	District agronomist	Same day	None	No
Livestock					
	Animal artificial insemination	Sector veterinary	Morning and evening	Cost of semen	No
	Treatment for animals	Sector veterinary	Same day	Cost of related material/drug	No
	Vaccination of animals	Sector veterinary	Same day	Cost of related material/drug	No
	Vaccination of animals	District veterinary	Same day	Cost of related material/drug	No
	Permit for slaughtering and selling meat	**Sector veterinary**	**Same day**	**None**	**Yes**
	Control of standards of animal products	Sector veterinary	Same day	Fine in case of irregularities	No
	Control of standards of animal products	District veterinary	Same day	Fine in case of irregularities	No
	Control of quality of chemical fertilizers and animal treatment drugs	Sector veterinary	Same day	Fine in case of irregularities	No
	Authorization for moving livestock in another sector	**Sector veterinary**	**Same day**	**As determined by the district council**	**Yes**
		District veterinary	**Same day**	**From frw 1,500 to frw 5,000**	**Yes**
	Authorization for moving livestock across the country	**District veterinary**	**Same day**	**From frw 1,500 to frw 5,000**	**Yes**
	Technical advice on livestock-related project	District veterinary	- Field visit done after one week - advise	None	No

			provided 4 days afterward		
	Purchase of semen	District veterinary	Same day	Market price	No
	Authorisation for selling animals in a cattle market	Sector veterinary	Same day	Cost of related tagging materials	No
	Bull castration services	Sector veterinary	1 to 2 days	Cost of related materials/drug	No
	Cattle ear tagging	Sector veterinary	Same day	Cost of tagging materials	No
	Fishing permit	District veterinary	One week	None	No

Source: adapted from district and sector service charters

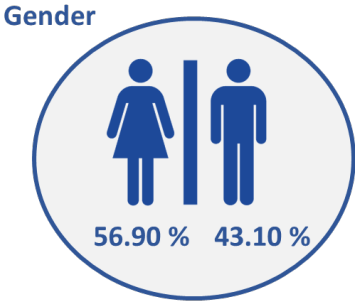
Findings on selected agricultural governance mechanisms

This chapter presents key findings from the survey conducted in 2018. Apart from respondents' demographics, this chapter focuses on the results on the current governance mechanisms of agricultural authorisation processes that are provided to farmers through cooperatives and sector offices, prevalence of non-compliance, corruption and injustices in the above mentioned authorisation processes (evidence and perception) as reported by farmers. Further, we indicate the impact of corruption and the level of non-compliance (with regard to time and payment) on a) the quality of the authorizations process and good governance and b) on citizens' welfare e.g. income status, poverty rates/food security, education, trusts in local government entities.

Demographics

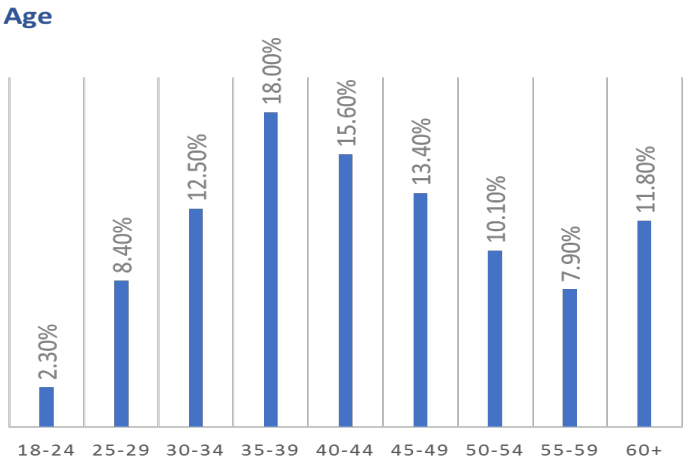
This section presents some socio-demographics of respondents with a focus on their district, sex, age, level of education, disability (or not), size of the household and distance to the nearest market.

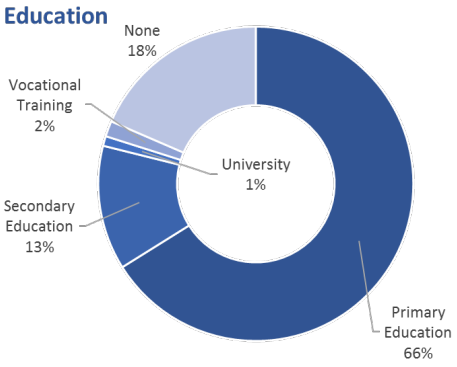
The survey respondents are almost equally distributed in all 12 districts covered. In most of the district, the sample represents 8% of the total sample size. The majority of respondents are female (56.9%). This may not be surprising because the proportion of women in the general population of Rwanda stands slightly higher than that of men (52% and 48% respectively), according to the National Institute of Statistics of Rwanda (2012a:10). Moreover, "female are more involved in agriculture compared to male, and most of them are in subsistence agriculture" (Gender Monitoring Office, 2017:10). Interestingly, there are more men than women (58% and 42% respectively) in agriculture cooperatives in Rwanda (Gender Monitoring Office, 2017:21).



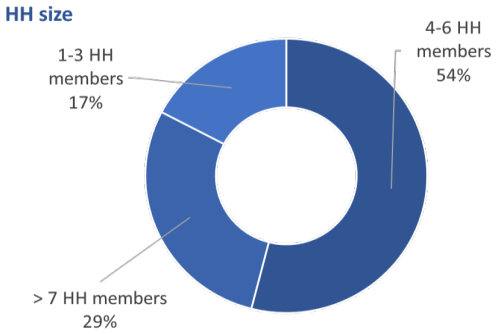
Respondents per District	No. of Respondents	Percentage (%)
Gakenke	207	9%
Gicumbi	260	11%
Gisagara	201	8%
Huye	170	7%
Kayonza	152	6%
Kirehe	199	8%
Musanze	200	8%
Ngororero	199	8%
Nyabihu	193	8%
Nyagatare	201	8%
Ruhango	203	9%
Rusizi	195	8%
Total	2380	100%

As far as age is concerned, cumulatively 6 in 10 are aged between 30 and 49, while close to 3 in 10 are 50 years old and above. One can argue that unlike other professions, old people remain active in agriculture and particularly in agricultural cooperatives. Furthermore, one can argue that there are less youth (below 30 years old) than adults and old people in farmers' cooperatives.

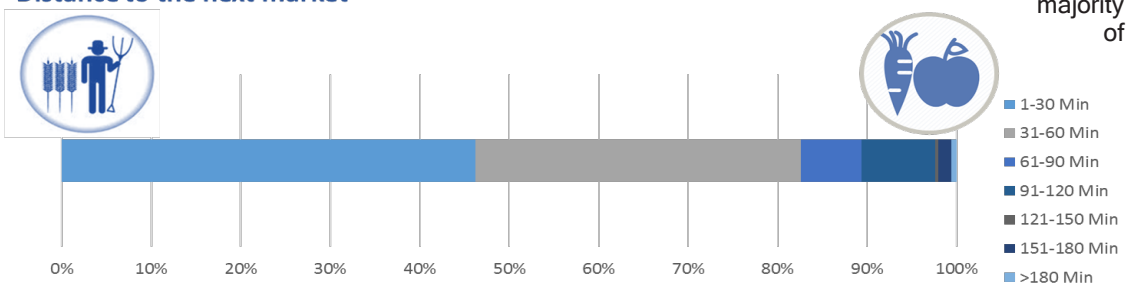




With regard to the education level, the survey shows that 66% of respondents have attained primary education, while close to 2 in 10 have not gone to school at all. This implies therefore that respondents at large and hence farmers are not highly educated. Around 5% of respondents live with disabilities. This proportion is nearly similar to that indicated by the National Institute of Statistics of Rwanda (2012b:66) which suggested that "overall, 458,306 persons (all ages) with disabilities are living in Rwanda", which is less than 5%.



Concerning the respondent's household size, more than half of respondents live in households with 4 to 6 members and cumulatively 7 in 10 respondents' households have at most 6 members. The national average household size stands at 4 individuals (National Institute of Statistics of Rwanda, 2012c: 24). Close to 3 in 10 respondents' households have more than 6 individuals, which implies the household size of a significant part of farmers' households is higher than the national average household size. One can argue that farmers are almost exclusively rural while rural households tend to be less educated and less applying family planning techniques than those in urban setting. Close to half of respondents (46%) dwell near a market facility (at most 30min walk). However, it takes more than a half an hour for the majority of



respondents to walk to the nearest market; which may negative effects on the commercialisation of their agricultural produces, especially in areas where there are no roads yet or where the latter are impassable.

Agricultural characteristics

This section looks at selected agricultural characteristics such as land ownership, size of land, and membership in farmers' cooperatives.

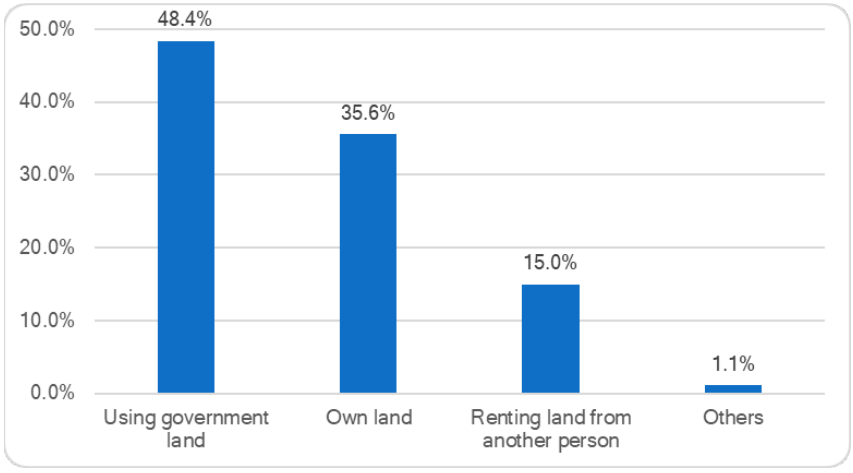


Figure 2 Ownership of land (N=2380)

The survey shows that land ownership in the farmers' community remains problematic. Only close to 4 in 10 farmers are land owners as opposed to 6 in 10 who largely use government land while other use land rented from neighbours. In some locations, local authorities lend public land, such as marshlands, to farmers cooperatives, especially to those involved in growing rice. This is done in the context of implementation of the Crop Intensification Programme (CIP) launched in 2007 mainly aimed at "increasing agricultural productivity in high-potential food crops and ensuring food security and self-sufficiency"

It is interesting to examine the size of the land used by farmers. The survey reveals an important proportion of farmers (around 4 in 10) whose land size is less than 1 ha. 38.6 % cultivate land on 1-10 ha. Around 2 in 10 respondents alone cultivate land whose size goes beyond 10 ha. One can assume that farms with bigger land size are largely government lands rented by some farmer cooperatives. Such cooperatives stand greater chance of running market-oriented agriculture than smallholders whose agricultural production may just aim to meet livelihoods need.

Nearly all respondents (97.8 %) are members of farmers cooperatives. The principle of agricultural cooperatives was adopted under the CIP in order to help farmers "to sit together and agree on what they can grow in a particular season" .

Table 6 Size of land used by respondents (in ha)

Hectares	Frequency	Percent (%)
< 1Ha	974	41.1%
1 - 10 Ha	915	38.6%
11 - 50 Ha	282	11.9%
51 - 100 Ha	103	4.3%
> 100 Ha	94	4.0%
Total	2368	100.0%

Specific loopholes in the development of the crop production value chain

In this chapter, we identify specific loopholes of the crop production process identified and perceived by the farmers. Here, farmers were able to specifically evaluate where they see the biggest challenges and what they perceive these problems are located.

Especially with regard to maize and rice production, farmers perceive less loopholes than in potato production, as the highest proportions of respondents who report loopholes (over 40%) are observed in the production process (planting, harvesting and selling) of irish potatoes. It is important to note that loopholes can be largely determined at the level of cooperatives and agro-dealers, whereas local authorities are only addressed in a few cases. **As the cooperatives and agro-dealers play a more and more important role in the development of the value chains of the three crops, this results calls for re-thinking the development, role and responsibilities of cooperatives and agro-dealers to improve the services provided to farmers.**

Table 7 Major loopholes in the crop production process: at which level are they located?

		At the level of cooperatives	At the level of agro-dealers	At the level of local authorities	Others	None	Total
Maize planting	N	305	176	18	134	325	958
	%	31.8%	18.4%	1.9%	14.0%	33.9%	100.0%
Rice planting	N	317	57	19	73	481	947
	%	33.5%	6.0%	2.0%	7.7%	50.8%	100.0%
Irish Potatoes planting	N	286	223	8	52	104	673
	%	42.5%	33.1%	1.2%	7.7%	15.5%	100.0%
Maize harvesting	N	199	19	29	51	536	834
	%	23.9%	2.3%	3.5%	6.1%	64.3%	100.0%
Rice harvesting	N	264	53	24	37	492	870
	%	30.3%	6.1%	2.8%	4.3%	56.6%	100.0%
Irish Potatoes harvesting	N	276	121	15	17	205	634
	%	43.5%	19.1%	2.4%	2.7%	32.3%	100.0%
Maize crop selling	N	166	254	15	76	300	811
	%	20.5%	31.3%	1.8%	9.4%	37.0%	100.0%
Rice crop selling	N	205	362	13	35	285	900
	%	22.8%	40.2%	1.4%	3.9%	31.7%	100.0%
Irish Potatoes crop selling	N	349	310	16	30	104	809
	%	43.1%	38.3%	2.0%	3.7%	12.9%	100.0%

In the figures below, the specific problems, that farmers are facing during the three phases of planting, harvesting and selling are displayed for each crop. Access to seeds, fertilizers and pesticides (availability and cost) stand among major issues faced by farmers at the planting stage. **As far as rice planting is concerned, it emerged from discussions in FGDs that sometimes there is delay to begin the**

planting campaigns (by sector/district agronomists as well as agronomists from Rwanda Agriculture Board (RAB). For example, normally Season A starts on 1st July but it started in September. **Such delays have severe consequences on the quality of rice, as rice would have to be harvested in the dry season, which is then also delayed and takes place during the rainy season. This hinders the harvest drying process, hence the quality of rice.** Sector agronomists who were interviewed in this study claimed that the delay is often caused by RAB agronomists, who do not provide seeds and fertilizers on time. Responding to this complaint, a RAB official who was interviewed in this study advanced that most of the quality seeds are imported and expensive. Not only the import process sometimes takes longer than expected, but also the time to popularize the use of new seeds among the farmers amplifies the delay. **RAB's strategy to mitigate this challenge is to promote local seeds multipliers whose number and capacity are still very low.**

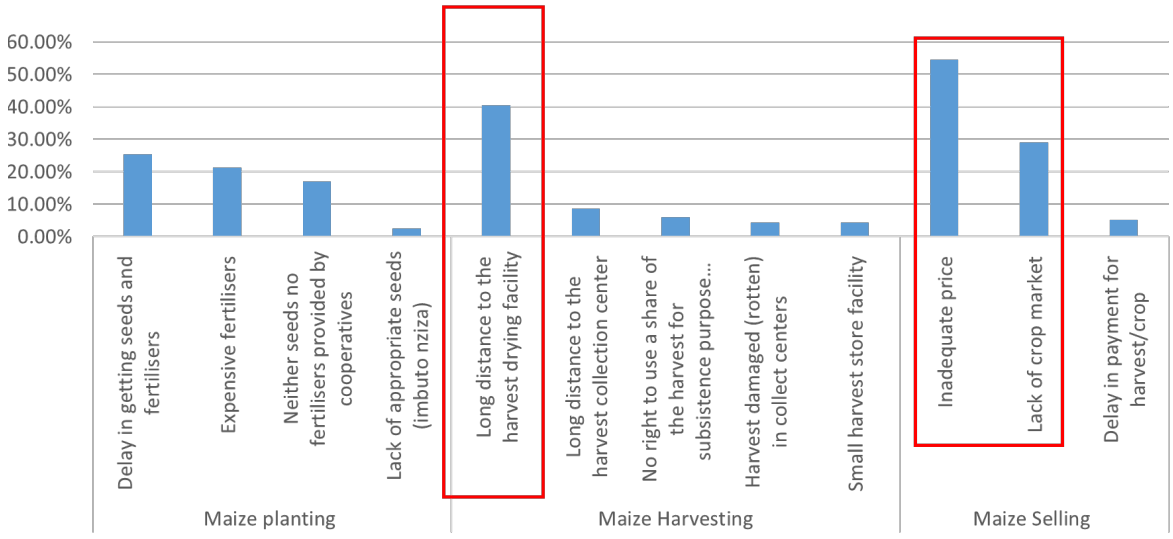
In the processing chain, many rice and maize farmers mentioned poor drying facilities or distance to the drying facilities. Especially for the quality of the products and then for the ability to sell the products, drying facilities are of high important. Another interesting issue that can be observed is the missing right of farmers to use a certain share of the harvest for subsistence, this is largely experienced especially for maize and rice farmers. Participants in FGD mentioned that for rice, farmers have to take the entire harvest to the crop collection centres, and have a right to 20kg (processed by agro-dealers) for household consumption. **However, in practice, such a portion of rice is not often provided because when farmers are not able to hit the production target (fixed by both cooperative leaders and agro-dealers) then they are not allowed to get the portion in question. However, farmers argued that they do not have full control on hitting the fixed targets because in many cases, delayed planting campaigns and delay in providing seeds and fertilisers stand among major factors that hinder the farmers' ability to meet the targets.**

At the harvesting stage of irish potatoes, getting the authorisation to harvest irish potatoes seems to be associated with issues. The biggest issue, highlighted by participants in FGDs relates to the delay in providing authorisations to harvest. Such delays were also echoed by some cooperative presidents who were also interviewed, he said:

> *"delays are caused by our concern to avoid that the received quantities of produces do not exceed the capacity of our crop collection centre on the one hand and to avoid price fall on the market due to excessive supply of produces. We therefore draw up a harvest calendar per each farmer, which eventually ends up causing delay in harvesting for some farmers. In some cases, delays are caused by errors observed in the names of bank account holders or in their account numbers" (Interview, Nyabihu District.*

As far as the selling of the crops is concerned, inadequate crop/harvest prices, delay in payment as well as lack of market for the produces emerge as core issues faced by some respondents in the three categories of farmers. These are trivial issues. While some of these loopholes are in the jurisdiction of the farmers' cooperatives, others (such as market and price) may go beyond the cooperatives' capacity and depend on the national, regional and international market dynamics. This calls therefore for a multi-sector approach (farmers, cooperatives, private sector and government) to address these issues effectively.

Maize


60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Delay in getting seeds and fertilisers
Expensive fertilisers
Neither seeds no fertilisers provided by cooperatives
Lack of appropriate seeds (imbuto nziza)
Long distance to the harvest drying facility
Long distance to the harvest collection center
No right to use a share of the harvest for subsistence purpose...
Harvest damaged (rotten) in collect centers
Small harvest store facility
Inadequate price
Lack of crop market
Delay in payment for harvest/crop
Maize planting
Maize Harvesting
Maize Selling

Rice


50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Lack of water
Lack of seeds
Tiny drying facility
No right to use a share of the harvest for subsistence purpose (food)
All harvest collected (no right to keep a portion for household meal)
Delay in payment
Inadequate price for the harvest
ikibazo ni rwiyemeza mirimo
Lack of market
Rice planting
Rice harvesting
Rice selling

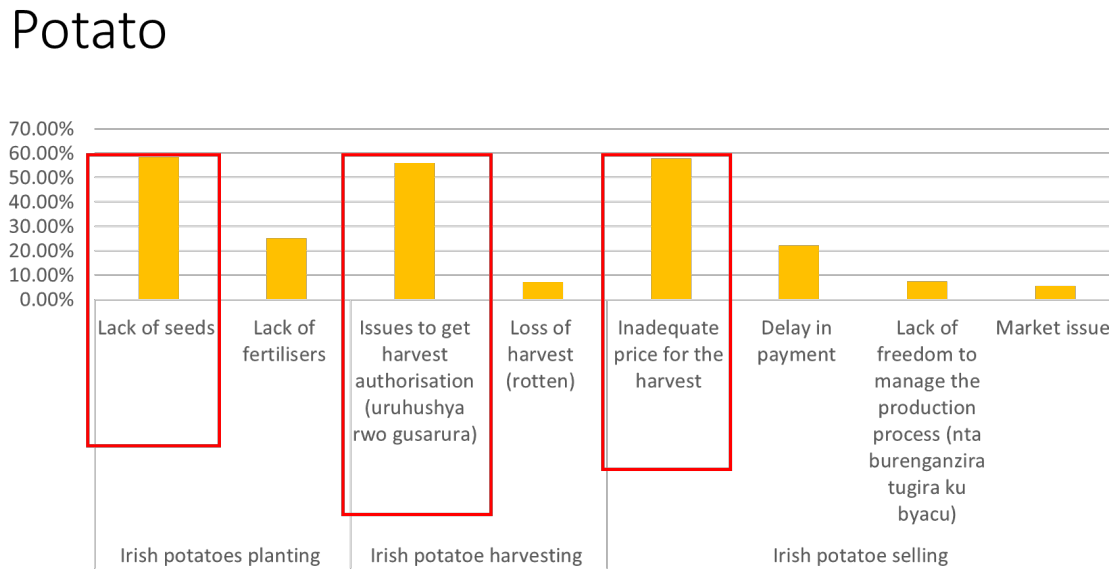
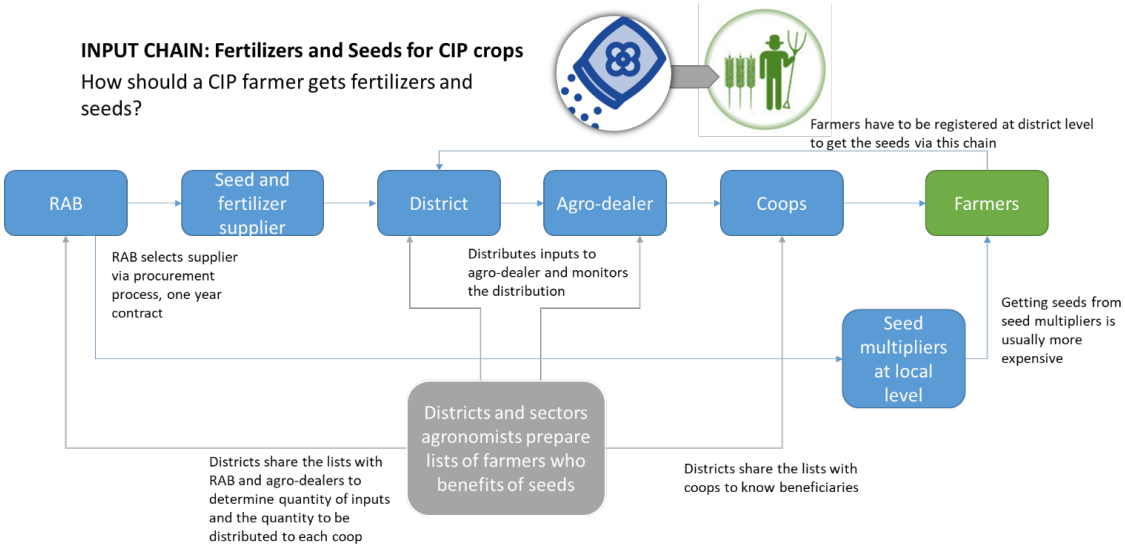


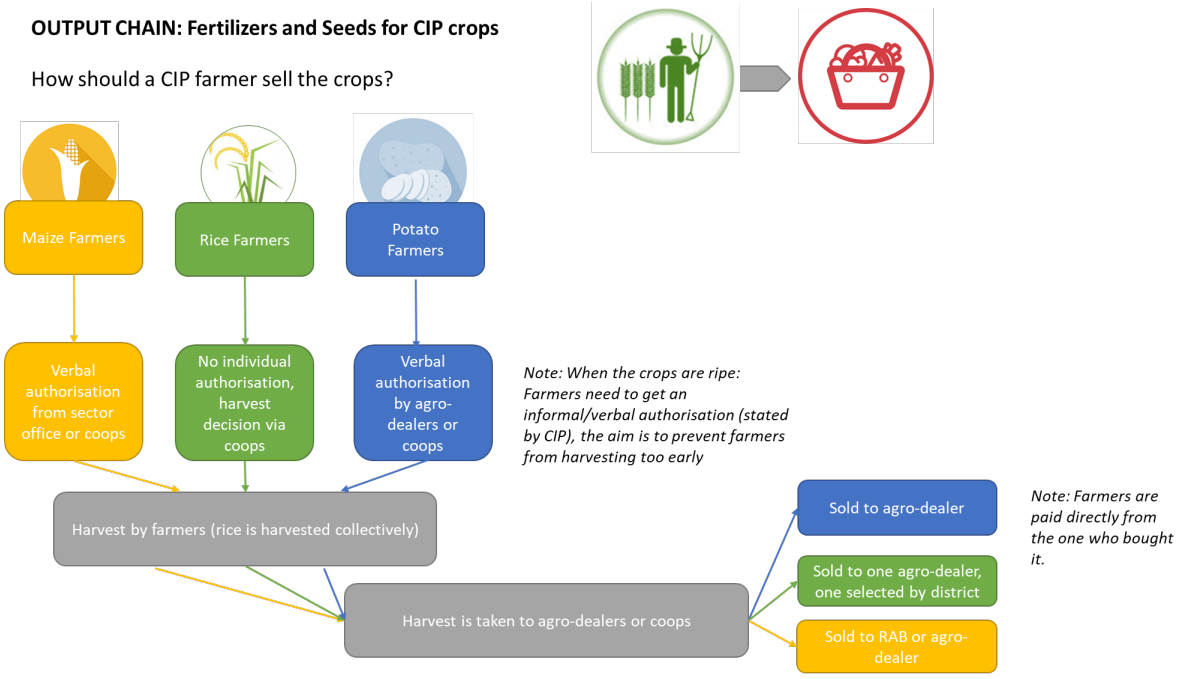
Figure 3 Major problems perceived by farmers in the production process by crop (maize, rice, irish potato)

CROP HARVESTING AUTHORISATIONS: AN INSTITUTIONALIZED PROCESS WITH IMPLICATIONS?

Under the CIP, the harvest phase for certain crops has been **subject to prior verbal authorization** from relevant authorities. Although it is not formalized anywhere and differing between the crops, this very much affects the value chains of maize, rice and potatoes. The authorization was mainly introduced as a quality assurance for harvesting to ensure that crops are harvested when they are ripe indeed and that commercialization meet minimal standards. In this section we examine the authorisation process and related issues.

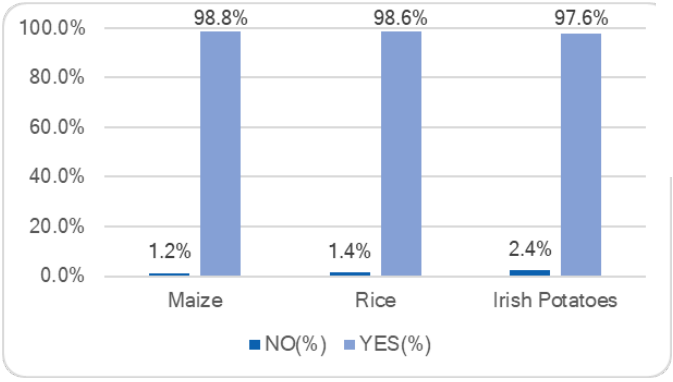
The following figures illustrate the **simplified input and output value chains**. In every fiscal year, RAB selects the seed supplier/fertilizer companies via an official procurement process, currently 6 companies are listed. The suppliers then make contracts with RAB but then directly allocate seeds and fertilizers to the Districts who have the lists with beneficiaries receiving seeds/fertilizers. Districts then allocate the seeds/fertilizers to the agro-dealers working in the specific sectors. Overall, seed provision is subsidized by the governments and farmers only contribute a certain share (Nkunganire), but for this, farmers have to register at district (now the smart Nkunganire system) to get the seeds. According the interviews many gaps in the seeds provision exist, e.g. where agro-dealers to not distribute seeds to cooperatives as they should. Some of these issues will be further explained in the following chapters.





The survey shows that the majority of respondents sought authorisations to harvest crops over the past 12 months. At least 6 in 10 respondents requested for such an authorisation regardless of the type of crops. Authorisations were most requested for rice harvest (close to 8 in 10 respondents) and least for irish potatoes (6 in 10 respondents). This may largely be explained by the harvest season and the survey schedule and the predominance or absence of a specific crop in the districts covered by this study. While efforts done by researchers to see if there exist **formal written** guidelines on requesting and issueing authorisations to harvest were vain, **both farmers and cooperative managers who were interviewed in this study, asserted the authorisation process is done verbally**. Farmers

inform their respective cooperative leaders that their crops are ripe and wait until the latter leaders issue a verbal authorization.



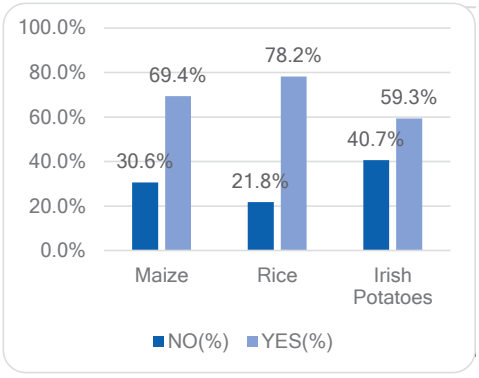


Figure 4 Share of respondents who requested for authorisation to harvest crops in the past 12 months (N=2380)

In most of cases, farmers request harvest authorisations from their cooperative presidents. This applies for the three types of crops assessed in this study. It is worth recalling that nearly all farmers are members of cooperatives. In practice, authorisations are therefore sought from the presidents of these cooperatives. However, the survey suggests that in very few cases authorisations were requested from local authorities (sector executive secretaries) and agro-dealers. It emerged from interviews with selected farmers that local authorities do not actually give permission to harvest but, in some instances, they can rather advocate for farmers when such permission has delayed or was unjustly denied from the cooperative leader.

Table 8 Officials to whom authorisation was requested

	Maize		Rice		Irish Potatoes	
	Freq	Percent	Freq	Percent	Freq	Percent
President of the cooperative	727	**87.7%**	826	**89.8%**	570	**96.8%**
Cell ES	3	**0.4%**	1	**0.1%**	1	**0.2%**
Sector ES	38	**4.6%**	1	**0.1%**	4	**0.7%**
Agro-dealer	31	**3.7%**	50	**5.4%**	5	**0.8%**
Others	30	**3.6%**	42	**4.6%**	9	**1.5%**
Total	829	**100.0%**	920	**100.0%**	589	**100.0%**

Overall, relevant officials grant harvest authorisations when the latter are sought. The data suggests that nearly all farmers who requested such authorisations received them. While this result proves to be encouraging, it is important to assess whether authorisations are issued in a reasonable time. This is examined in the table below.

Overall, harvest authorisations are issued in a reasonable time. The survey shows that for both maize and rice, 6 in 10 applicants received authorisations in less than a full day. It took at most one week for around 9 in 10 respondents who requested for authorisations to get them. This is important in that the crop is likely to perish if harvest does not occur in the right time. However, getting irish potatoes harvest authorisation does not appear to be as quick as it for rice and maize. The data reveals that not

only close to 3 in 10 respondents who requested for irish potatoes harvest permission (as opposed to 6 in 10 applicants for rice and maize harvest authorisations) received them at most in one day, while it took more than a week for around 3 in 10 applicants to get those authorisations. In the same vein, close to 2 in 10 respondents received the authorisation in a period exceeding 2 weeks. The data disaggregated by district and type of crops (see annex) shows that the highest proportions of respondents whom it took **more than 2 weeks to get the harvesting permission are observed in Nyabihu and Musanze (34.2% and 27.4%, respectively)** for irish potato growers. This questions, to some extent, the process of issuing harvest authorisations in general, and the abuse of power to issue these authorisations. It is worth noting that irish potatoes perish easily when they are not harvested in due time. Authorisations issued after such a long period entailed serious damages to farmers, in terms of income and likewise food security. This is substantiated by some farmers' testimonies in sections below.

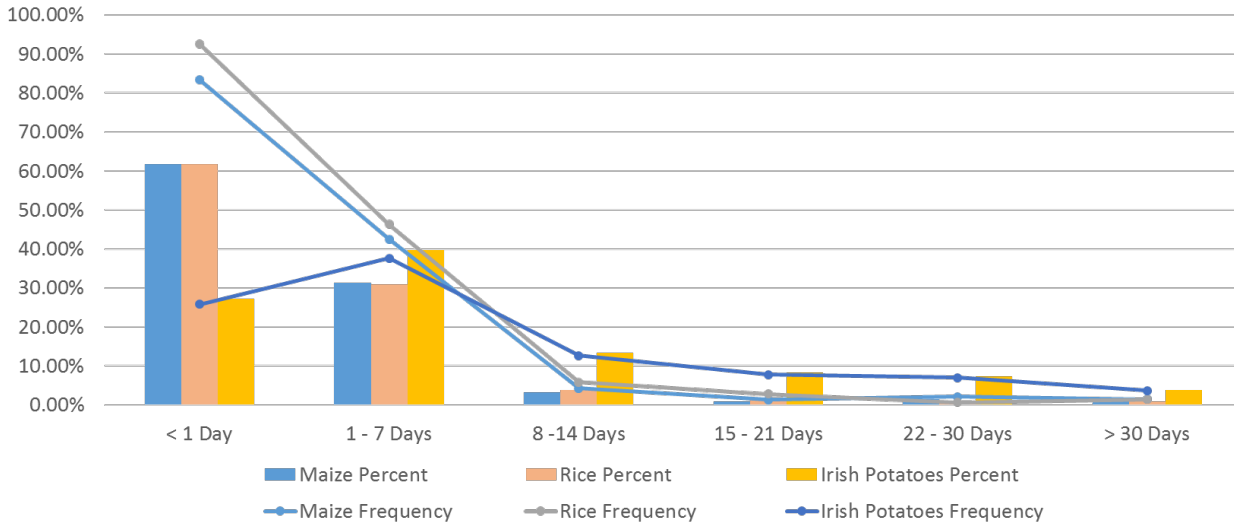


Figure 6 Time taken to receive the authorization

With the following figure (and regression analysis in the annex), we identified determinants of who is more likely to be effected by a longer waiting times of authorisations. Here, the district variable of Musanze and the farmers procucing irish potatoes are more likely to wait longer than 5 days for an authorization to harvest. We also included some control variables, where the gender, disability, distance to market variables are all significant, however, only for disability, the coefficient is a bit higher, indicating that farmers with disability are not more effected from longer waiting times. Similar as in the next probit model, the estimates indicate, that those farmers using government land are less likely to wait longer than 5 days. This might indicate that those farmers using government land for their production, are better integrated/connected to those issuing the authorizations.

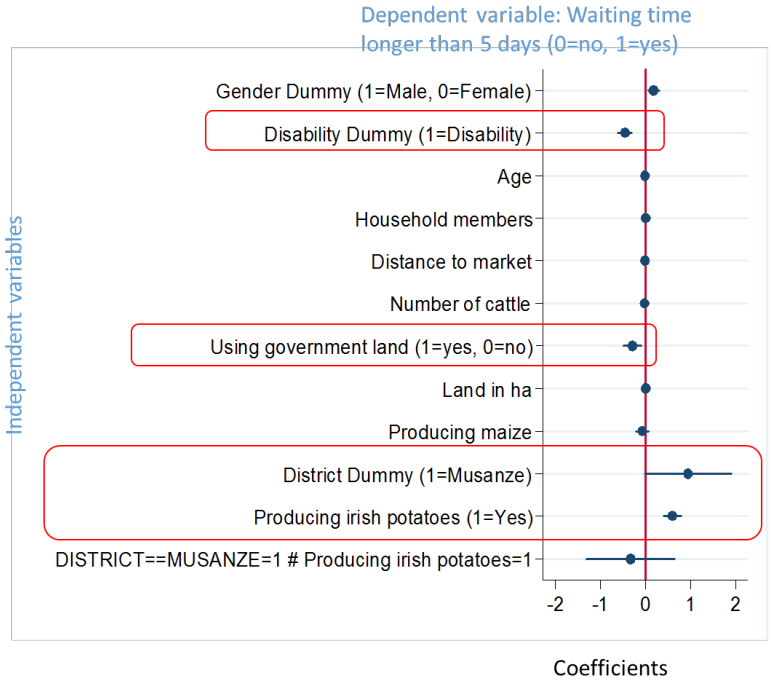


Figure 7 Results of the probit model, dependent variable: waiting time longer than 5 days (0=No, 1=Yes)

Even though getting permission to harvest crops is seemingly not a big issue to farmers, the data suggests that failure to secure harvesting authorization has serious repercussions to famers. **In the few cases whereby permissions were not eventually issued, affected farmers either bribed, kept waiting until the crop perished or simply took the risk of harvesting without permission.** All these behaviours constitute a heavy burden for affected farmers. For instance, participants who harvested without permissions after failing, claimed that repercussions included paying fine, confiscated crops (by local authority) or **paying bribe to the so called "chercheur" (intermediaries of APTC or and police) to be allowed to sell the crops to the nearest market** (FGD with farmers in Nyabihu district).

Table 9 Reaction to refused authorisations

	Maize	Rice	Irish Potatoes	
	Percent	Percent	Freq	Percent
Reported it to local leaders	0.0%	7.1%		12.5%
Paid bribe to get authorization	10.0%	50.0%		31.3%
Kept waiting and eventually crops perished	30.0%	28.6%		12.5%

Harvested without permission	30.0%	14.3%	43.8%
Others	30.0%	0.0%	0.0%
Total	100.0%	100.0%	100.0%

Both refusal of and delay in granting harvest authorisations have let to crop perishing among other consequences. Irish potatoes have been particularly affected. Around 3 in 10 respondents who grow irish potatoes saw their crop perishing due to either of the two reasons. The minimum loss involved 50kgs of potatoes while the maximum one is worth 15,000 kg or 15 tones. The total quantity of irish potatoes which perished in this regard is estimated to 215,385 kg that is an average of 1,099 kg per every irish grower. District disaggregated results show that the biggest total quantities of irish potatoes that perished are observed in Nyabihu (137,345 kg) and Musanze (78,040 kg) which are main irish growing districts in the country. The data also suggests important quantities of maize (6,965 kg) and rice (1,240 kg) that perished for the same reasons. It emerged from FGDs and KIIs that **some irish potato growers went bankrupt as a result of crop perishing in the same context**. This finding is further discussed later under the section on effects of corruption and loopholes in authorization process on farmers. **This calls for urgent and effective measures to end unjustified refusals and delays in providing harvest authorisations to farmers.**

Table 10 Perished crops

	Frequency	Percent	Total	Minimum kg	Maximum kg	Sum	Mean
Maize	17	2.0%	839	15	5,000	6,965	410
Rice	14	1.5%	917	10	300	1,240	89
Irish Potatoes	196	33.3%	588	50	15,000	215,385	1,099

As mentioned before, the impact of losing a considerable amount of the harvest is very severe for smallholder farmers. Using a probit model (see annex), which is displayed in the following figure, we identified determinants when farmers are more likely to have persihed crops in this specific context. With these estimates we can make our argument even stronger in that sense, that for those farmers, where the waiting time for the authorization was beyond 5 days, the likelihood of having perished crops is higher. Further, especially irish potatoe farmers are most affected as already described through the descriptive statistics. Interestingly, the problem of persihed crops is seemingly more likely in Musanze, which also points at some organisational and governance issues in this district as this is less the case in other districts. Two other variables have a significant impact on the having persihed crops. The first the gender variable, which shows that male farmers are more likely to have perished crops. In addition, Those farmers, who use governmental land for farming, are less likely to have perished crops, compared to private land users and/or farmers renting land from others. As we only consider the CIP crops here, this is an interesting finding, that seemingly, farmers using government land for producing any of the CIP crops, are better off in terms of waiting time as well as having persihed crops.

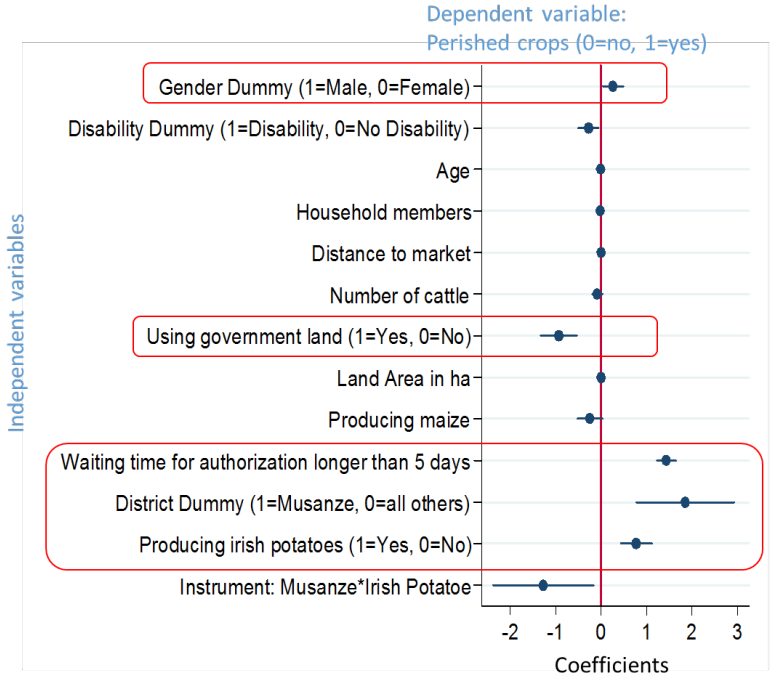


Figure 8 Results of the probit model, dependent variable: dummy variable crops perished (0=No, 1=Yes)

BRIBE IN THE PROCESS OF APPLYING FOR AND GETTING HARVEST AUTHORISATIONS

It is worth noting that while the authorisation to harvest applies to all types of crops (rice, maize and irish potatoes), authorisation in livestock concerns only slaughtering and selling meat, moving livestock in another sector, and selling animals in a cattle market. This section examines the likelihood of bribe occurrence in authorisation process for both crops. It assesses the frequency of bribe encounter, officials involved, whether or not the bribe was passive, and whether or not bribe was eventually paid.

Table 11. Bribe encounter in the process of applying for and getting crops harvest authorisations

		Maize	Rice	Irish Potatoes
Bribe encounter	Frequency	1	7	5
Officials involved	President of the cooperative	-	6	5
	Cell ES	1	-	-
	Others	-	1	-
Bribed demanded or offered	Demanded	-	5	3
	Offered	1	2	2
Bribe payment	Number of payments	1	7	
	Total amount paid	6,000	107,000	42,000

The process of applying for and getting harvest and livestock authorisations proves to be very largely bribe free. The survey suggests that the incidence of **bribe encounter for the three crops considered together stands below 1%**. This is very encouraging given that it is the first time that incidence of corruption (mainly bribe) has been that low in Rwanda. Discussions in FGDs and KIIs also claimed that corruption is very low in this area and few cases may occur mainly when issuance of permission, though verbal, has delayed. The little bribe involved cooperative leaders who are also in charge of granting harvest authorisations.

SELLING THE CROPS: PAYMENT MODALITIES, TIMELINESS AND PRICE

The data suggests that payment for crops sold be cooperative members is ultimately done for the large majority of respondents. Around 8 in 10, 7 in 10 and 10 in 10 farmers who sold their maize, rice and irish potatoes crops respectively, eventually got the payment, though with delays for some farmers as will be shown later in a separate section. However, the data shows a **significant share of farmers who did not received payment at all**. This concerns rice and maize farmers only. Discussions in FGDs and KIIs concurred with this finding and advanced that such a lack of payment is mainly **caused by the fact that sometimes the rice and maize crops sold by farmers does not meet minimum quality standards for commercialisation purposes**. In such an instance, participants, sold crops are eventually returned to farmers.

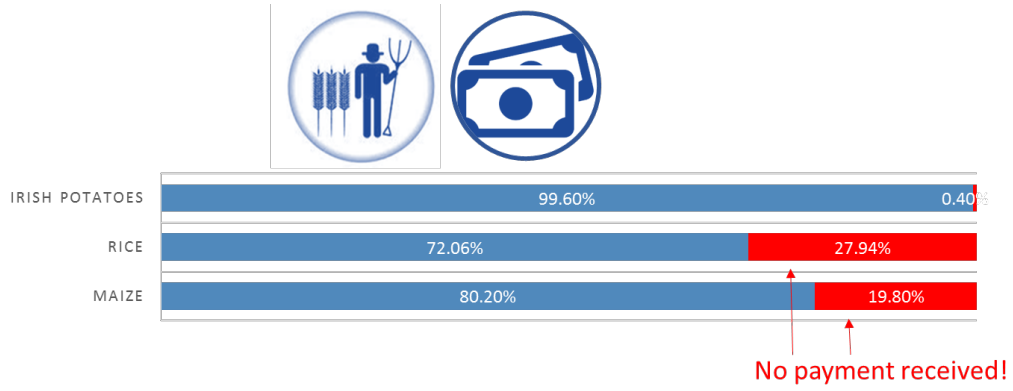


Figure 9 Share of respondents who received payment for their crops after getting harvest authorisation

The data reveal that farmers get paid by different players of the specific value chains. The majority of irish potato farmers received payment from cooperative leaders. While harvest payment for a half of rice farmers was paid by agro-dealers, nearly another half of farmers in this category received payment from their cooperatives. As regards payment for rice and maize harvest, a half of farmers got

payment from RAB, while the rest of payment was effected by cooperatives and others (RAB). **This shows inconsistency in the payment flow, which in turn may hinder quality service delivery given that some farmers may not know exactly whom they would turn to for collect payment for their crops**.

Table 12. By whom respondents got paid after getting the authorisation to harvest their crops

	Maize		Rice		Irish Potatoes	
	Freq	Percent	Freq	Percent	Freq	Percent
Cooperative	189	**28.4%**	276	**42.5%**	392	**68.5%**
Agro-Dealer	1	**0.2%**	347	**53.4%**	137	**24.0%**
Rwanda Agriculture Board (RAB)	333	**50.1%**	13	**2.0%**	9	**1.6%**
Others	142	**21.4%**	14	**2.2%**	34	**5.9%**
Total	665	**100.0%**	650	**100.0%**	572	**100.0%**

Overall the payment for harvested crops is faster for maize and irish potatoes than for rice. Cumulatively, it took at most a month for around 8 in 10 respondents (as opposed to 6 in 10 for rice growers) who got harvest authorisations to get the payment. The period was much shorter (at most two weeks) for around 7 in 10 for maize growers and 6 in 10 for irish potatoes growers; but much longer for rice growers (close to 4 in 10). It emerged from FGDs with rice growing farmers that due to the big number of cooperative members, the registration and billing of harvest for all cooperative members takes a long time. Similarly, it takes a couple of months to get payment after billing is completed. In the words of a participant in a FGD in Kayonza District:

> *"Our cooperative counts 2, 500 members. Every member gets a queuing number that s/he presents for harvest registration and billing. It takes more than two weeks to have our harvested registered and billed, while payment is generally effected 2 or 3 months later".*

Moreover, the delay of payment for rice harvest is sometimes caused by the fact that rice imported from some neighbouring countries is cheaper than the one produced locally. On the market, the latter will most probably not be sold until the imported one is sold out and thus causing a delay.

> *"There is high competition of the rice from Tanzania in terms of price. This delays the selling of local rice and hence the payment for farmers' harvest", KII, Official from Ministry of Trade and Industry, Kigali.*

Further, the data shows that, cumulatively, close to 2 in 10; 5 in 10 and 4 in 10 respondents who grow maize, rice and irish potatoes respectively, were not paid before two weeks. While a two-week period may sound relatively reasonable for crop payment, one month may instead be somewhat longer especially for farmers whose agriculture is the main or mostly probably the only source of income. The delay issue was also advanced by participants in FGDs who claimed that **not only the payment sometimes is effected with delay but also it happens that the produces/crops are returned from the crop collection centres to farmers on pretext that those crops are either rotten (e.g. irish potatoes) or do not meet quality standards**.

> *A participant in a FGD in Nyabihu District said "one of our fellow cooperative members who harvested 5 tonnes of irish potatoes took them to the collection centre. The agro-dealer took it to Kigali and one week later their returned the entire produce to me advancing that it was rotten and no payment followed. In reality, he handed in quality crop with eventually got perished in Kigali. This caused important loss to the farmer in question".*

A similar problem was reported in these words in December 2017, where a fellow farmer got harvest authorisation from the cooperative. The farmer harvested 35 tonnes of irish potatoes and put it in sacks for collection. He waited for 2 weeks and eventually the harvest perished. This entailed a loss

worth 4,970,000 RWF as then the price was 142 RWF/1kg. This affects negatively the farmers both financially and emotionally.

Table 13 Time taken to get paid after getting the harvest authorisation

	Maize		Rice		Irish Potatoes	
	Freq	Percent	Freq	Percent	Freq	Percent
The same day	248	34.2%	52	7.9%	174	31.1%
After one week	261	36.0%	166	25.1%	113	20.2%
Between 1-2 weeks	47	6.5%	44	6.6%	59	10.6%
Between 3 weeks - 1 months	77	10.6%	132	19.9%	116	20.8%
Beyond 1 month	55	7.6%	198	29.9%	90	16.1%
Never, I got back my crops	37	5.1%	70	10.6%	7	1.2%
Total	725	100.0%	662	100.0%	559	100.0%

Satisfaction with the prices of harvested crops proves to be mixed. Overall the survey suggests moderate levels of satisfaction with maize and rice prices. Satisfaction level stands higher for rice and maize but lower for irish potatoes. A cross-tabulation in our research revealed lower levels of satisfaction (around 30%) with irish potatoes crop prices in Nyabihu and Musanze Districts which stands among top producing districts countrywide. With regard to the rice price, lowest satisfaction levels are observed in Ruhango and Kirehe Districts (around 30%), while the highest levels are reported in Nyagatare (75%) and Kayonza Districts (close to 70%). A recent study by the Rwanda Civil Society Platform (November, 2018) showed that farmers dissatisfaction with their influence to determine the prices for produces.

> *"Price fixing has been a controversial issue in recent times with most farmers complaining that they do have a fair share of the profit from their produce" […] "66.1% of the Irish potato farmers noted that they did not have a say in determining the final price at which they sold their produce. A similar trend was observed among Maize farmers at 67.9% and for Rice farmers at 35.1%" (Rwanda Civil Society Platform, 2018: 43).*

Table 14 Satisfaction with the price estimated for crops by the cooperative and agro-dealer

	Maize		Rice		Irish Potatoes	
	Freq	Percent	Freq	Percent	Freq	Percent
Very dissatisfied	123	**17.1%**	126	**19.0%**	248	**42.0%**
Dissatisfied	144	**20.0%**	144	**21.7%**	123	**20.8%**
Neither satisfied nor dissatisfied	193	**26.8%**	96	**14.5%**	108	**18.3%**
Satisfied	218	**30.3%**	187	**28.2%**	95	**16.1%**
Very satisfied	41	**5.7%**	110	**16.6%**	17	**2.9%**
Total	719	**100.0%**	663	**100.0%**	591	**100.0%**
Score	**2.87**	**57.5%**	**3.02**	**60.3%**	**2.17**	**43.4%**

The dissatisfaction of the prices varies very much among the districts and crops. The following figures illustrates that there is seemingly a regional influence that has an effect on crop prices and with this

also on the satisfaction and dissatisfaction about the prices received. This can especially interesting for policy makers but also the private sector.

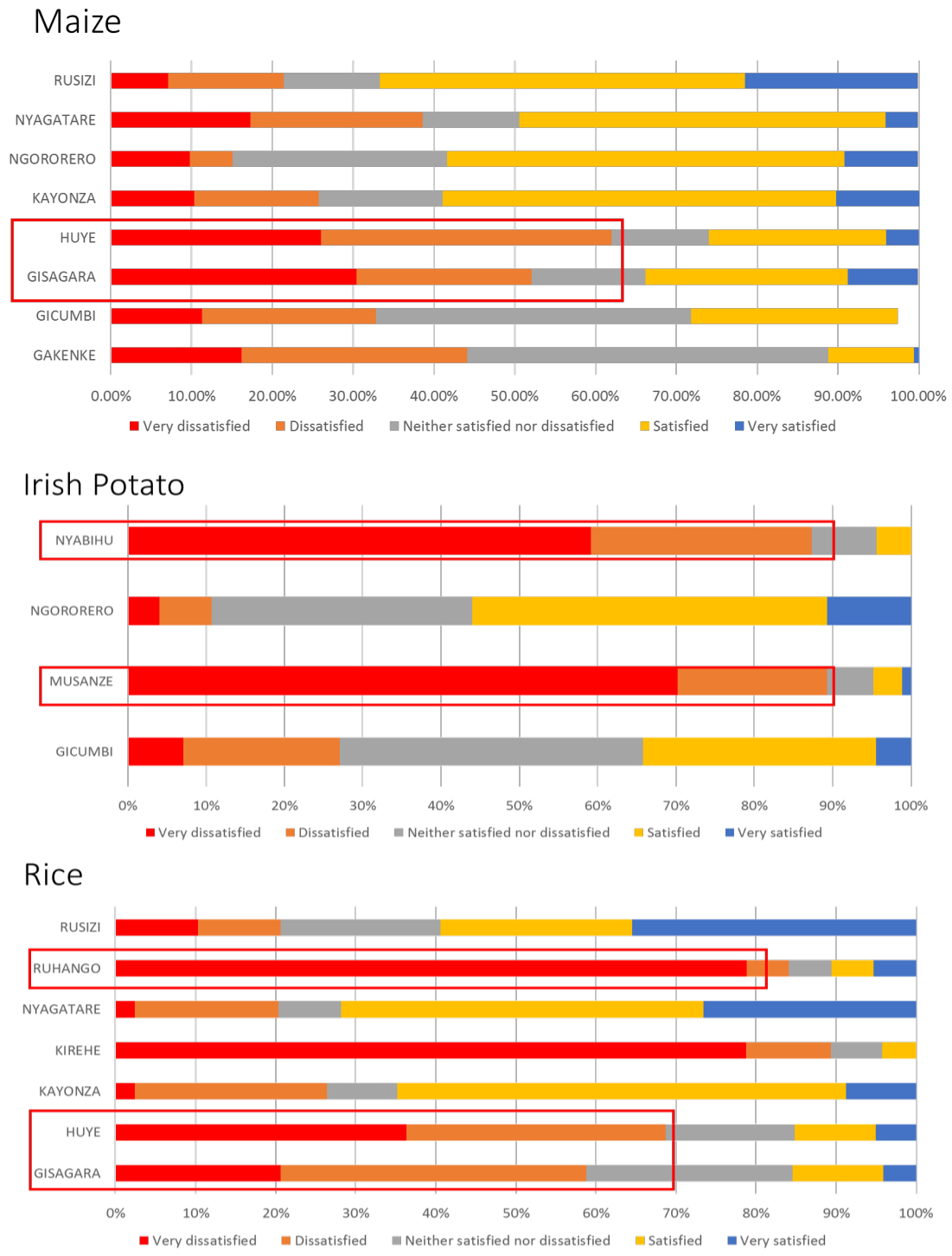


Figure 10 *Regional variation of crop price satisfaction*

Furthermore, it emerged from FGDs with rice growers that the net profit from the sold harvest is quite small. For example, participants in a FGD in Kayonza District claimed that for the latest rice season, the cost of rice production on a 20 are farm and net monthly earning are very low, the details are displayed in the following figure. With this, farmers end up with an average monthly earning from rice production is only 23,000 RWF, which does not even consider labour and transaction costs. Especially for rice, the workload is very high and in many cases, farmers only has the right to cultivate on 20 are only.

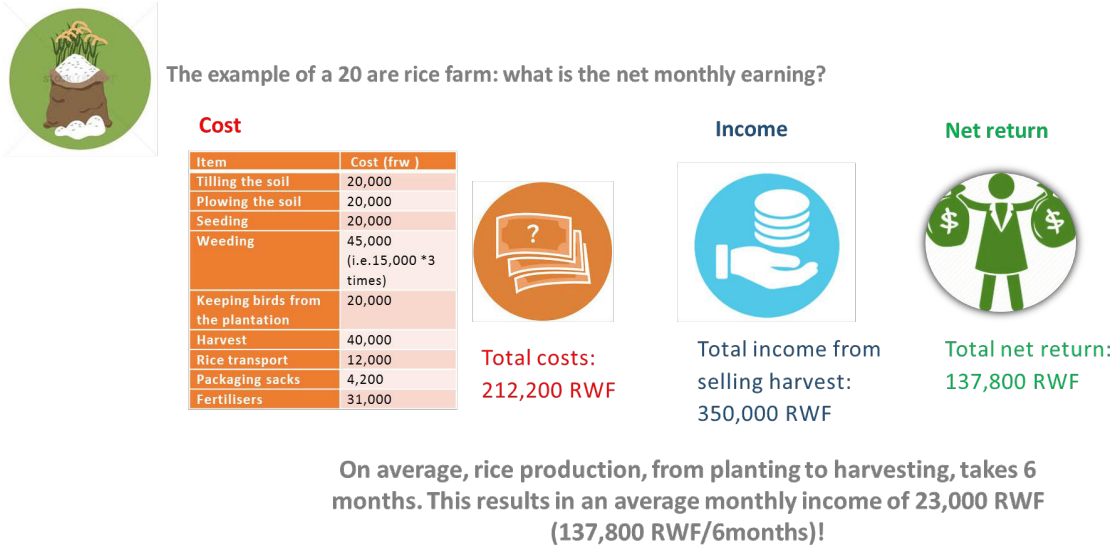


Figure 11 The costs, income and net returns of a 20 are rice farm

Overall, farmers have no choice but to keep growing crops despite dissatisfaction with the prices allocated to their crops. As the following figure shows, the majority will not give up or change activity as a result of being dissatisfied with the prices. Only less than 10% of respondents who grow maize and rice and close to 15% of irish potatoes' growers stopped growing these crops as a result of dissatisfaction. One can argue that either farmers do not have many alternatives and at least they still get net minimal returns after selling the crops. However, data disaggregated by district suggests that in Musanze and Nyabihu, 21.6% and 18.3% of those who were not satisfied with the price of crops (see annex) stopped growing irish potatoes. **We would argue, where farmers can effectively participate in determining the prices, this will contribute in ensuring farmers' motivation and gains, which in return also as an impact on the food security situation in Rwanda.**

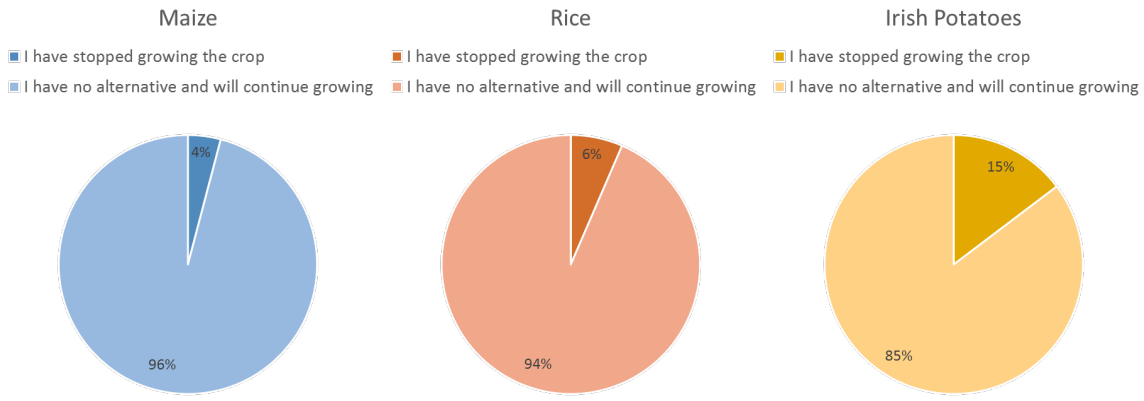


Figure 12 Reaction after being dissatisfied with the crop prices

Specific loopholes in the development of service provision by local governments

In this chapter, we focus on service delivery in the agricultural sector by local governments. This is one of the important governance mechanisms faced by livestock and crop farmers at district and sector level. According to our findings, the major agricultural services requested by local government service providers are for chemical fertilisers and plant treatment (close to 8 in 10 respondents) and improved variety of seeds (close to 7 in 10 respondents) in the past 12 months. Other services consist of treatment for animals, animal vaccination, and animal artificial insemination. The table below examines the service providers to whom services were requested.

Table 15: Respondents who requested for selected services from local governments service providers

	No(N)	Yes(N)	Total(N)	No(%)	Yes(%)	Total(%)
Animal artificial insemination	1333	359	1692	78.8%	21.2%	100.0%
Treatment for animals	1149	591	1740	66.0%	34.0%	100.0%
Vaccination of animals	1254	471	1725	72.7%	27.3%	100.0%
Acquiring chemical fertilizers and treatment for plants	523	1645	2168	24.1%	75.9%	100.0%
Acquiring improved variety of seeds	683	1486	2169	31.5%	68.5%	100.0%
Permit for slaughtering and selling meat	1459	76	1535	95.0%	5.0%	100.0%
Authorisation for moving livestock in another sector	1503	28	1531	98.2%	1.8%	100.0%
Authorisation for selling animals in a cattle market	1481	50	1531	96.7%	3.3%	100.0%
Bull castration services	1484	6	1490	99.6%	0.4%	100.0%
Cattle ear tagging	1455	36	1491	97.6%	2.4%	100.0%
Others	1124	6	1130	99.5%	0.5%	100.0%

The services were largely requested from sector veterinaries and agronomists. This is obvious because on the one hand, the sector remains the centre for major service delivery in local government. On the other hand, most of the services considered in this section come within the jurisdiction of the two categories of service providers. However, it is also interesting to see that still, although the service charter defines it, some services are requested at different levels. For example, with regard to the authorization of moving livestock. This indicates that there is still a knowledge gap of farmers about the roles and responsibilities of certain service providers. This also has an effect on the efficient governance of service provision.

Table 16: Officials from whom the service was requested

	District Veterinary	District Agronomist	Sector Veterinary	Sector Agronomist	Cell Level	Others	Total
Animal artificial insemination	8	4	289	14	10	35	360
	2.2%	1.1%	80.3%	3.9%	2.8%	9.7%	100.0%
Treatment for animals	22	7	430	25	29	71	584
	3.8%	1.2%	73.6%	4.3%	5.0%	12.2%	100.0%
Vaccination of animals	16	5	400	15	17	18	471
	3.4%	1.1%	84.9%	3.2%	3.6%	3.8%	100.0%
Acquiring chemical fertilizers and treatment for plants	39	21	49	439	75	1018	1641
	2.4%	1.3%	3.0%	26.8%	4.6%	62.0%	100.0%
Acquiring improved variety of seeds	41	13	36	397	56	932	1475
	2.8%	0.9%	2.4%	26.9%	3.8%	63.2%	100.0%
Permit for slaughtering and selling meat	6	1	12	9	2	46	76
	7.9%	1.3%	15.8%	11.8%	2.6%	60.5%	100.0%
Authorization for moving livestock in another sector	2	0	17	2	4	3	28
	7.1%	0.0%	60.7%	7.1%	14.3%	10.7%	100.0%
Authorization for selling animals in a cattle market	17	0	33	1	6	5	62
	27.4%	0.0%	53.2%	1.6%	9.7%	8.1%	100.0%
Bull castration services	1	0	4		1	1	7
	14.3%	0.0%	57.1%	0.0%	14.3%	14.3%	100.0%
Cattle ear tagging	2	0	26	5		3	36
	5.6%	0.0%	72.2%	13.9%	0.0%	8.3%	100.0%
Others	0	0	4	0	1	1	6
	0.0%	0.0%	66.7%	0.0%	16.7%	16.7%	100.0%

The data shows that veterinarian services are provided to almost all applicants (who meet the requirement). For all related services which were requested for, at least 9 in 10 applicants received them in the past 12 months, except for bull castration service (received by a half of applicants) and authorization for moving livestock in another sector (received by 8 in 10 applicants). This result is encouraging in that it implies minimized likelihood of bribe in service provision. Previous researches conducted by Transparency international Rwanda revealed that more the services are unduly denied to those who qualify for them the more the likelihood of corruption. The major reason for dissatisfaction consists in the claim that the service provider was not available.

Table 17: Respondents who received the services they requested

	No (N)	Yes (N)	Total (N)	No (%)	Yes (%)	Total (%)
Animal artificial insemination	16	343	359	4.5%	**95.5%**	100.0%
Treatment for animals	15	565	580	2.6%	**97.4%**	100.0%
Vaccination of animals	5	461	466	1.1%	**98.9%**	100.0%
Acquiring chemical fertilizers and treatment for plants	9	1641	1650	0.5%	**99.5%**	100.0%
Acquiring improved variety of seeds	17	1460	1477	1.2%	**98.8%**	100.0%
Permit for slaughtering and selling meat	7	69	76	9.2%	**90.8%**	100.0%
Authorisation for moving livestock in another sector	6	26	32	18.8%	**81.3%**	100.0%
Authorisation for selling animals in a cattle market	4	45	49	8.2%	**91.8%**	100.0%
Bull castration services	5	6	11	45.5%	**54.5%**	100.0%
Cattle ear tagging	3	34	37	8.1%	**91.9%**	100.0%
Others	0	6	6	0.0%	**100.0%**	100.0%

Overall the survey suggests high and very high levels of respondents' satisfaction with the services received from both veterinarian and agronomist service providers over the past 12 months. With regard to the level of satisfaction of the most requested services (chemical fertilizers and treatment for plants improved variety of seeds), satisfaction stands high with 78.1% and 78.2%, respectively. However, this figure is slightly lower compared to other services.. Bull castration services instill the lowest level of satisfaction among the respondents (77.1%). Overall, such high levels of respondents satisfaction imply quality services received by applicants and may be considered as a good indicator of minimized likelihood of bribe. However, such levels of satisfaction are far from being optimal and therefore call for improvement. For example, in some locations in the Eastern Province, participants complained that **while authorization for selling cattle is secured, they are obliged to pay taxes even when the cattle was not eventually sold. This proves to be unfair because not only the tax is paid while the sale did not actually happen, but also a farmer may fail to sell the same cattle for many times and keep paying related taxes**. In such a case, it entails serious loss for the farmer.

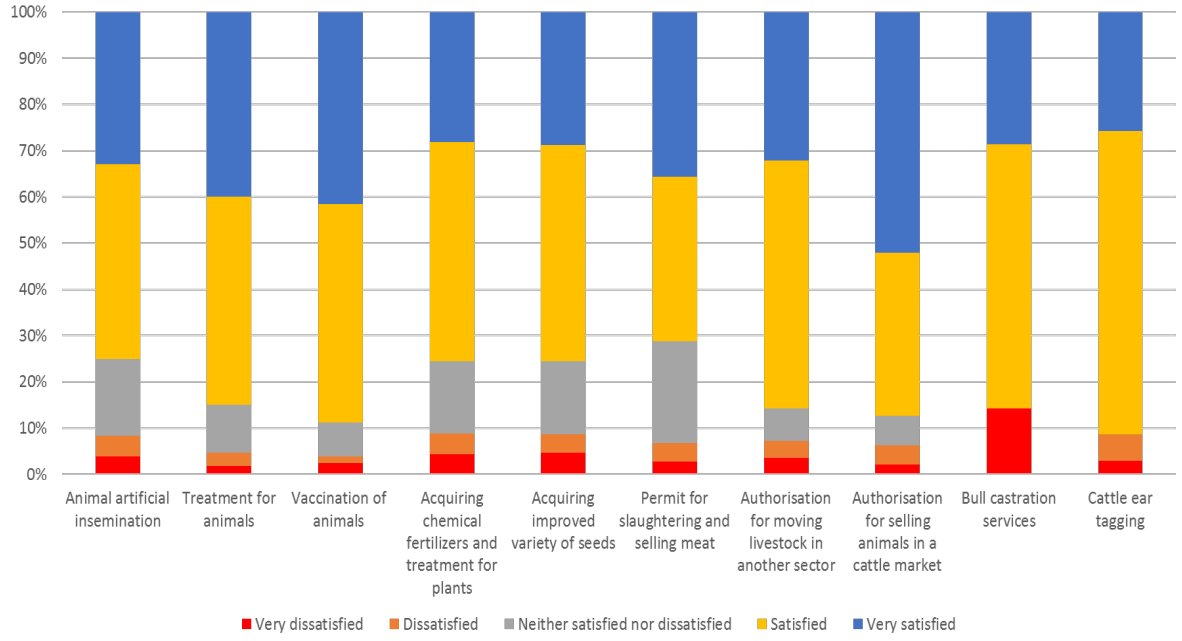


Figure 13 Satisfaction with the service received

Acquiring chemical fertilizers and treatment for plants and acquiring improved variety of seeds appear to be not only most costly but also the most requested services (of all services considered in this study). And as we have seen in the previous chapters, access to seeds and fertilizers remains one of the main challenges of farmers during the first production phase. The maximum cost for the former and the latter services stands at 860,000 RWF and 320,000 RWF, respectively. Basically, the cost of service provided at sector level is determined in the "service charters" approved by district councils. The service cost relates mainly to the materials associated with the service in question as highlighted in service charters. Such costs are largely determined by the market. The costs that can vary between the material used, are not transparently displayed in the service charter, which can be abused by charging too much for some materials. Further, for livestock authorization-related services, district service charters determine the service cost which, in all districts is fixed between 1,500 RWF and 5,000 RWF. **However, the Districts Standard Service Charter for Secondary City Sector (MINALOC, 2015), includes the cost of veterinary transport (without fixing the amount) to deliver the service (if it is provided out of service).** This was also confirmed by participants in this study. Further, it emerged from FGDs that due to the insufficiency of official veterinaries (there is only one at sector level), farmers resort to the service of independent veterinaries who appear to be more available than the former. However, the latter veterinaries are more expensive than the former. The following quote from a farmer in Ruhango District illustrates this issue:

> *"After seeking in vain the service of the sector's veterinary to assist in my cow delivery, I eventually turned to an independent veterinary who charged 100,000 RWF for the service. This was a burden to me as the service was too expensive".*

On a similar note, it is worth noting that the cost of veterinarian services often involves the transport fee of the veterinary which depends largely on the distance from the sector office to the cattle location. **Participants highlighted that in most of cases, the transport proves to be costly because sectors area is quite large, so that farmers living close to the sector offices are better off as they are charged less money.**

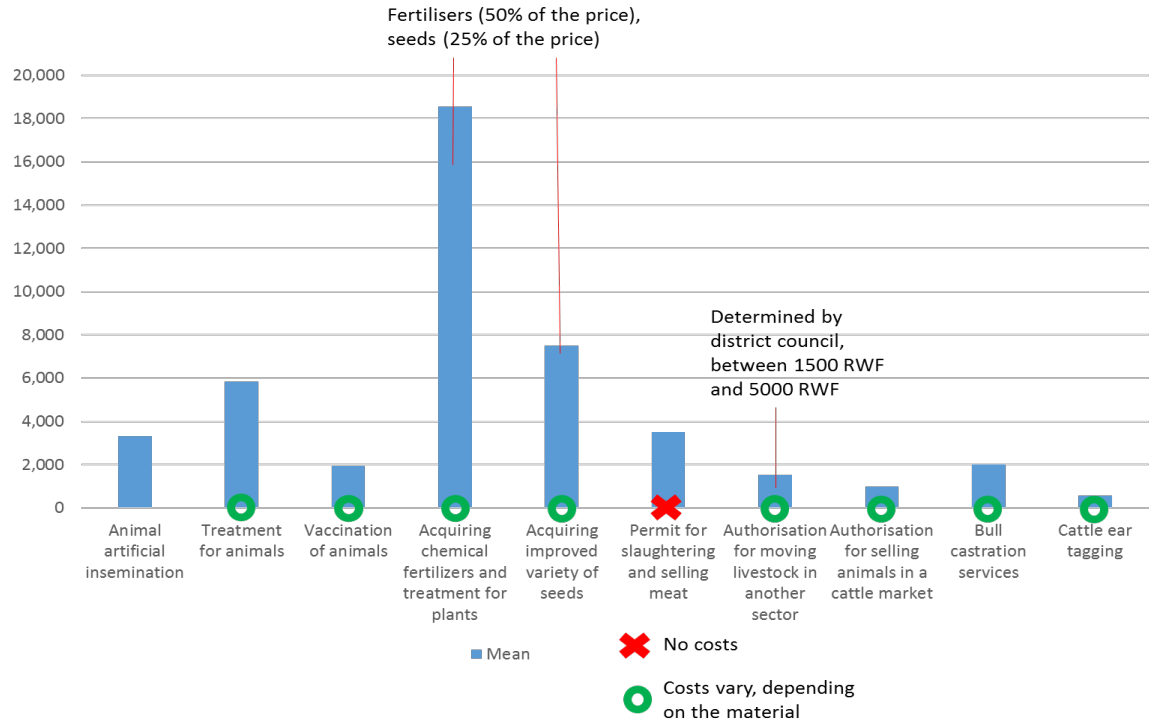


Figure 14 *Amount paid to get the service*

The provision of services assessed in this section proves to be very largely fast. For most of the services requested by the respondents, the time for service provision did not exceed one day. To the large extent, the time taken abides by the timeframe provided for in the district and sector service charters whereby most of services are meant to be provided the same day. **This reduces the risk of bribe because, as earlier argued in this report, the faster the service the lower the risk of bribe to get it**. However, the data shows an important proportions of respondents (around 20% cumulatively) who received the service with delay (beyond one day). In up 30 % of the cases, especially for acquiring chemical fertilizers, the service is not delivered timely as mentioned in the SSC.

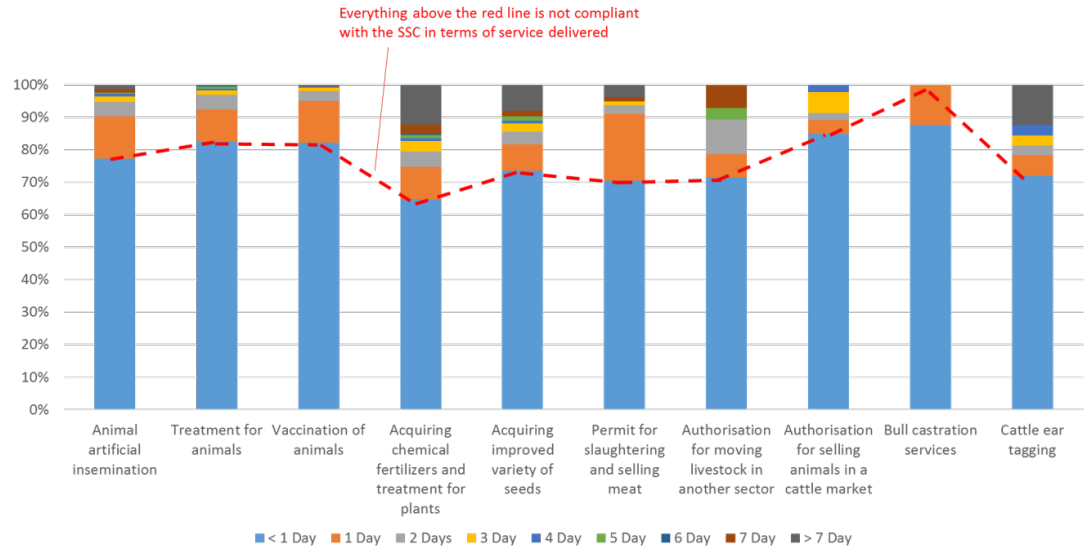


Figure 15 Time taken to get the service

CORRUPTION AND NON-COMPLIANCE IN SERVICE DELIVERY

The provision of selected veterinarian and agronomic services appears to be corruption free. The survey suggests zero or very low incidence of corruption occurrence while seeking those services by the respondents. The very few cases of corruption reported account for less than 1%. If all conditions were met to make respondents comfortable to discuss freely on issues of corruption, then this finding would be a good indicator that a corruption free service delivery that Rwanda envisions is possible. Recent studies conducted by TI Rw on bribery in service delivery placed the prevalence of corruption at 2.08% at national level (Rwanda Bribery Index, 2018)

Table 18 Share of respondents who experienced corruption while requesting selected livestock services over the past 12 months

	No(N)	Yes(N)	Total(N)	No(%)	Yes(%)	Total (%)
Animal artificial insemination	740	4	744	99.5%	**0.5%**	100.0%
Treatment for animals	852	0	852	100.0%	**0.0%**	100.0%
Vaccination of animals	768	0	768	100.0%	**0.0%**	100.0%
Acquiring chemical fertilizers and treatment for plants	1292	6	1298	99.5%	**0.5%**	100.0%
Acquiring improved variety of seeds	1169	4	1173	99.7%	**0.3%**	100.0%
Permit for slaughtering and selling meat	575	1	576	99.8%	**0.2%**	100.0%
Authorization for moving livestock in another sector	579	3	582	99.5%	**0.5%**	100.0%
Authorization for selling animals in a cattle market	606	0	606	100.0%	**0.0%**	100.0%
Bull castration services	566	0	566	100.0%	**0.0%**	100.0%
Cattle ear tagging	574	0	574	100.0%	**0.0%**	100.0%
Others	344	3	347	99.1%	**0.9%**	100.0%

Perceived effects of corruption and weak governance mechanisms on livelihood

This section examines the effects of non-compliance in the delivery of service, such as the identified loopholes, corruption or poor service delivery in agriculture on individual socioeconomic conditions of service seekers (farmers who are respondents in this study). The analysis is based on the experience of respondents who were directly affected by cases of non-compliance while seeking services.

Refusing harvest authorisation for farmers who qualify for it impact negatively on the socioeconomic conditions of their households. Although the proportion of eligible respondents is too small to allow drawing and statistical inference or conclusion, the survey reveals that farmers whose requests were not positively addressed by service providers lost their agricultural services (74%) and faced issues of catering for school fees for their children, covering the cost of health services, livelihoods, and meeting bank commitments taken. **This calls for changes in the governance of authorisations to ensure that farmers are aware of the requirements for crop harvest and sale authorisations, one the one hand, and that authorisations are timely issued to applicants who qualify, on the other hand**. So too, cooperative leaders should encourage their members to endeavour to meet the requirements prior to filing their applications for authorisations. The same consequences are faced by farmers in case of **delayed** issuance of such authorisations as shown in the table below.

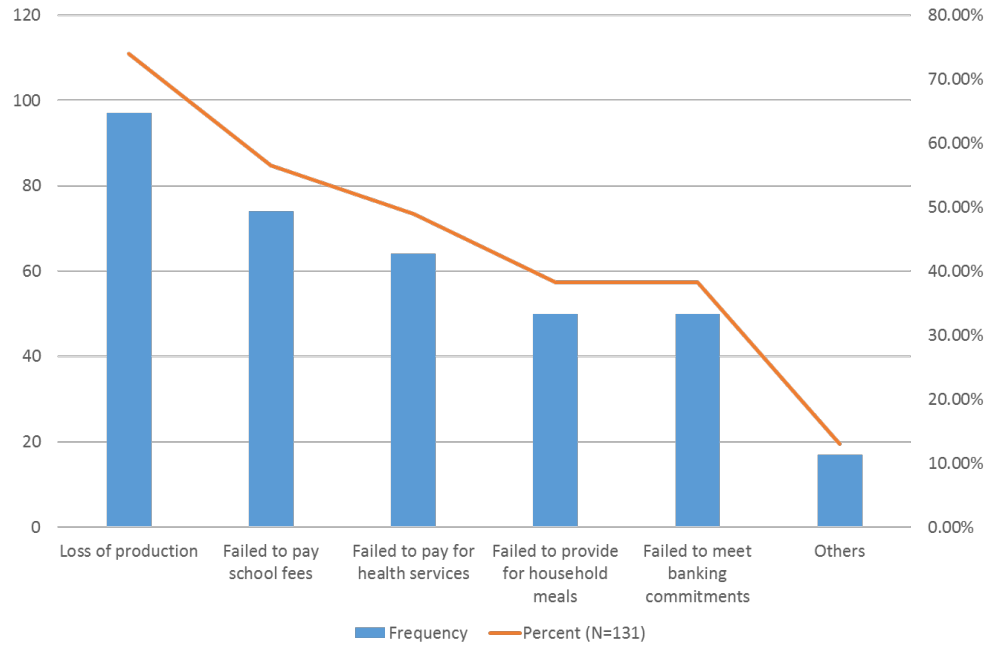


Figure 16 *Effects of **refusing** harvesting authorisations on socioeconomic conditions of respondents' households*

The survey results show that an important proportions of respondents who faced serious problems as a result of delay in being granted crop harvesting authorisations. Close to 7 in 10 respondents who requested for authorisations but received them late, eventually saw their crop perishing in the field which led to loss of expected income (close to 6 in 10). In turn, this entailed, to some extent, financial vulnerability which affected the livelihoods of farmers' households (including meals, school fees and health care) as well as banking hassles for some of them. One can therefore argue that timely service delivery is an indicator of quality service and hence a factor of farmers' economic growth. **This calls for**

setting up clear and effective mechanisms of holding service providers to account especially case of unfair delay and refusal of harvesting authorisations.

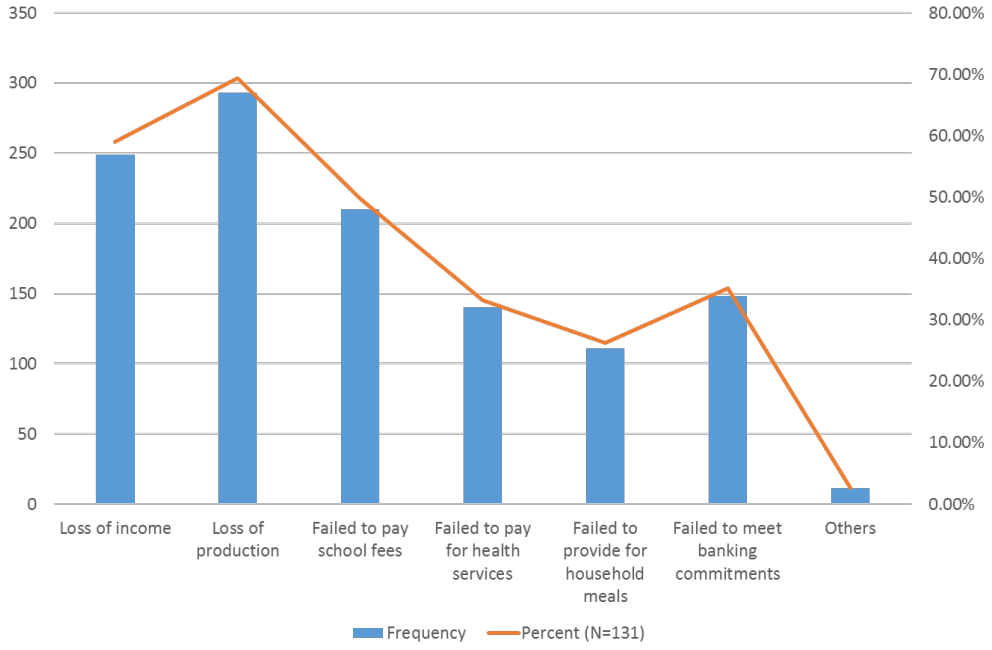
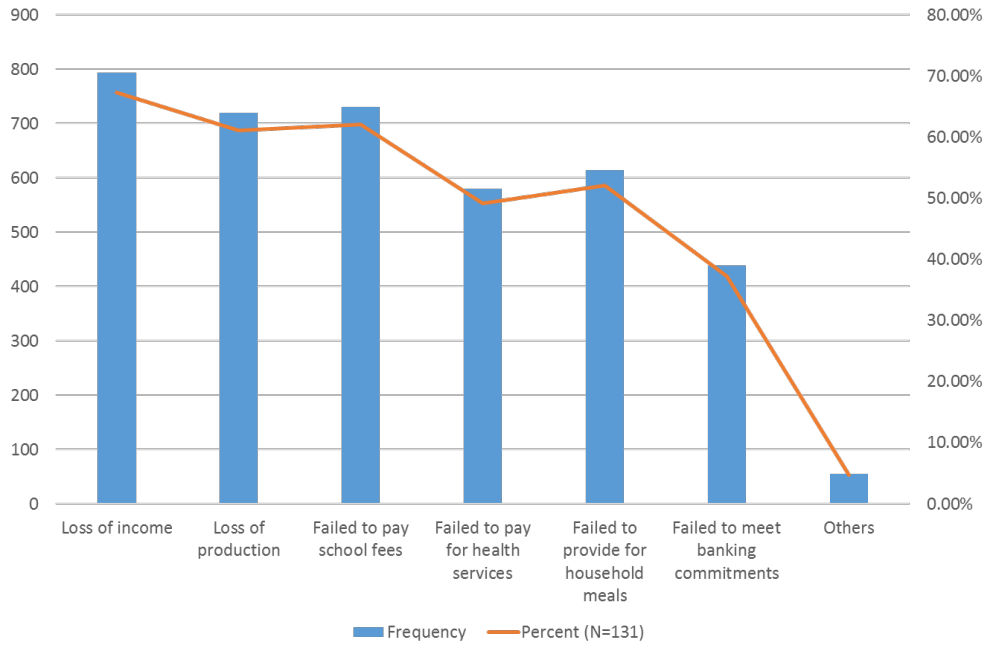


*Figure 17 Effects of **delay** issuance of harvesting authorisations on socioeconomic conditions of respondents' households*

As earlier highlighted in this report, delay in payment of harvested produces stands among major issues of non-compliance by service providers. Such delays do not go without serious effects. Given that the income from selling of agricultural produces is mainly used in both households' livelihoods and business development, delays in payment for the sold produces affect definitely these two areas. To a big extent, affected farmers claimed that they did not only lost a part of their income to feel the gap caused by the delay, but also faced issues of sustaining the farming business and those related to covering school fees for children/relatives, health services, meals and bank commitments.


900
800
700
600
500
400
300
200
100
0
80.00%
70.00%
60.00%
50.00%
40.00%
30.00%
20.00%
10.00%
0.00%
Loss of income
Loss of production
Failed to pay school fees
Failed to pay for health services
Failed to provide for household meals
Failed to meet banking commitments
Others
Frequency
Percent (N=131)

Conclusion and recommendations

The purpose of this research was to examine the governance mechanisms of the authorization process in agriculture and effects of existing loopholes on farmers' welfare and business development. Specifically, the study aimed:

- To analyze the current governance mechanisms of agricultural authorisation that are provided to farmers (planting, harvesting and selling)
- To determine the prevalence of corruption in the above mentioned authorisation processes (evidence and perception) as reported by farmers
- Identify and analyse major loopholes in agricultural production process (planting, harvesting and selling)
- To assess the effects of corruption and loopholes on farmers' welfare and on their business (agriculture)

The main results are summarized below:

During the planting stage:

- Access to seeds, fertilizers and pesticides (availability and cost) stand among major issues faced by farmers at the planting stage. As the input chain has shown, many steps take place until the seed reaches the farmer. For example, as far as rice planting is concerned, sometimes there is delay to begin the planting campaigns as seeds are not available by sector/district agronomists as well as agronomists from Rwanda Agriculture Board (RAB)
    - Loss of crops and income as a result of delays in launching agricultural seasons and in supplying seeds, fertilizers and pesticides

Pre- and post-harvesting stage:

- Agro-dealer monopoly on the purchase and marketing of crops after harvest; this monopoly contributes to the speculation on prices at the expenses of both farmers and consumers, especially potato market prices in 2018 have increased tremendously
- Loss of crops and income as a result of delays in issuing harvest authorizations by cooperatives and in returning the crops already sold to the cooperatives and/or agro-dealer
- Insufficiency of crop drying facilities and access to drying facilities

Selling of crops and payments to farmers:

- Payment for the sold crops which is generally done by cooperative leaders, agro-dealers and RAB depending on types of crops, is largely done
    - However, farmers complain about the delays and sometimes unfair prices
- Low participation of farmers in determining crop prices
- Farmers' dissatisfaction with prices fixed by agro-dealer and cooperative leaders
- Lack of freedom to keep a share of crop harvest for household subsistence purpose (food) is also largely experienced especially for maize and rice. Participants in discussions maintained that for rice, farmers have to take the entire harvest to the crop collection centers, and have a right to 20kg (processed by agro-dealers) for household consumption. However, if the production targets are not met, they rather build up a depth and cannot take their share for private consumption

Regulatory framework, authorisations and service delivery:

- There is no clear legal framework governing the process of applying for and granting informal/verbal authorisations for planting, harvesting and selling of crops;
    - For some of the crops, this has led to the abuse of power in terms of providing harvest authorisations and prices of agricultural crops
- Authorisations for planting, harvesting and selling are largely granted to requesting farmers of all types of crops assessed in this study (rice, maize, irish potatoes)
    - However, we observed delays of providing authorizations which do not go without repercussions
- At large, bribe appears to be not negligible through the assessed crops value chain especially while seeking authorizations for harvesting and selling.
- In the livestock sector, service delivery is mainly organized via the district and sector administrations
- Here, farmers are largely satisfied with service delivery in livestock and know to a large extent where they can get their services from
- Insufficiency of sector veterinary which lead some farmers to resort to private veterinaries at higher cost
- In some locations, farmers pay tax associated with cattle selling even when the cattle in question was not eventually sold.

We recommend the following actions to address improvements in good governance schemes in the Rwandan agriculture to improve agricultural development:

Policy recommendations at the level of Ministries

- Opening the discourse around good governance in agriculture and proactively implementing the following measures to strengthen governance processes, manage risks and keep corruption out:
- MINICOM & RAB: set up regulations on harvest and selling process. Such regulations would aim mainly at specifying the time to harvest and to sell the crops, the authority responsible for granting authorisations, the requirements for getting authorisations, the time it takes to get authorisations, the appeal and reporting mechanisms and sanctions in case of non-compliance, among other things. This would enhance transparency and compliance with regulations and accountability of officials both at cooperative and local government level.
- MINICOM, MINALOC, MINAGRI & RCA: enforce sanctions against officials (national, local and cooperative level) and farmers who fail to comply with regulations governing harvesting and crop sale processes
- MINICOM, MINALOC & RAB: the agro-dealer monopoly (single agro-dealer) should be ended. It emerged that APTC (Agro Processing Trust Corporation Ltd) monopoly on the purchase of the harvest from farmers' cooperatives (Irish potatoes) and on the sale to retailers and consumers entailed farmers' discontent and "speculation" in prices of irish potatoes crops. MINICOM, MINALOC and MINAGRI should put an end to this monopoly and authorise farmers' cooperatives to sell the harvest collected from farmers. However, relevant measures should be taken to ensure that irish potatoes farmers have full ownership of their cooperatives
- MINICOM, MINALOC, MINAGRI & RCA: increase farmers' participation in decision-making within their cooperatives: farmers, particularly those growing irish potatoes, complained that they participate in determining prices for their crops. 4. MINICOM, MINALOC, MINAGRI & RCA should ensure that farmers have real power to influence decision-making in those cooperatives. Such a power would rely in members' capacity and freedom to elect cooperative leaders and hold them to account, and to determine the prices for the crops, among others.

Policy recommendations at decentralized level

- MINAGRI, RAB and districts authorities: Adopt the "Community Health Workers" Approach (used by the Ministry of Health) and train community members on basic veterinary related services in a bid to complement the work of sector veterinary and therefore contribute in mitigating the challenge of insufficient number of the latter staff.
- District councils: reinforce the existing monitoring mechanism for local tax collection to ensure fairness in the tax collection process, particularly with regard to cattle selling

Technical recommendations at the level of RAB and cooperatives

- Cooperatives governance structure within the value chain need to be addressed: Ensure timely payment for crops immediately after sale and making the value chain process transparent to all famers. The study revealed that delayed payment for harvested crops impacts negatively on both the agriculture as a business and the socioeconomic conditions of farmers. Cooperative leaders should proceed the payment right after sale of crops to enable farmers cater to household livelihoods on the one hand and sustain their business on the other hand.
- Leaders of cooperatives: Increase farmers' participation in decision-making within their cooperatives. Farmers, particularly those growing irish potatoes, complained that they participate in determining prices for their crops. Cooperative leaders should ensure that farmers have real power to influence decision-making in those cooperatives. Such a power would rely in members' capacity and freedom to elect cooperative leaders and hold them to account, and to determine the prices for the crops, among others. Additionally, before attending important decision-making meetings with strategic partners (e.g. policy-makers) they should consult cooperative members to collect their needs and concerns for advocacy purposes.
- RAB: eradicate delays in launching agricultural seasons and in supply of fertilizers, pesticides and seeds: RAB should take all necessary measures to end the delays reported in the launch of agricultural seasons and in the supply of fertilizers, pesticides and seeds. This can be done for instance by drawing a clear plan (a head of time) and allocate appropriate resources (financial, material and human).
- RAB: increase crop drying facility: insufficiency of crop drying facility emerged among major issues facing the agricultural development, particularly with regard to rice and maize crops. RAB should support farmers' cooperatives to address this challenge.
- RAB and cooperative should create disincentives for corruption and injustice: through codes of conducts that are enforceable, mechanisms for participation of users/citizens/consumers, sanctions against corruption

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Annex

Time taken to receive authorisation

	MAIZE		RICE		IRISH POTATOES	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
< 1 DAY	500	61.7%	555	61.8%	155	27.3%
1 - 7 DAYS	255	31.4%	278	31.0%	226	39.8%
8 -14 DAYS	26	3.2%	35	3.9%	76	13.4%
15 - 21 DAYS	8	1.0%	17	1.9%	47	8.3%
22 - 30 DAYS	13	1.6%	4	0.4%	42	7.4%
> 30 DAYS	9	1.1%	9	1.0%	22	3.9%
TOTAL	811	100.0%	898	100.0%	568	100.0%

Time taken to receive authorisationdisaggregated by district

MAIZE

DISTRICT	TIME	FREQUENCY	PERCENT
GAKENKE	< 1 Day	108	59.7%
	1 - 7 Days	57	31.5%
	8 -14 Days	2	1.1%
	15 - 21 Days	3	1.7%
	22 - 30 Days	6	3.3%
	> 30 Days	5	2.8%
		181	100.0%
GICUMBI	< 1 Day	68	81.0%
	1 - 7 Days	13	15.5%

	8 -14 Days	1	1.2%
	> 30 Days	2	2.4%
		84	100.0%
GISAGARA	< 1 Day	55	50.9%
	1 - 7 Days	44	40.7%
	8 -14 Days	2	1.9%
	15 - 21 Days	3	2.8%
	22 - 30 Days	4	3.7%
		108	100.0%
HUYE	< 1 Day	53	74.6%
	1 - 7 Days	17	23.9%
	8 -14 Days	1	1.4%
		71	100.0%
KAYONZA	< 1 Day	20	52.6%
	1 - 7 Days	15	39.5%
	8 -14 Days	3	7.9%
		38	100.0%
KIREHE	< 1 Day	22	84.6%
	1 - 7 Days	1	3.8%
	8 -14 Days	3	11.5%
		26	100.0%
NGORORERO	< 1 Day	96	67.6%
	1 - 7 Days	43	30.3%
	8 -14 Days	1	0.7%
	15 - 21 Days	1	0.7%
	22 - 30 Days	1	0.7%
		142	100.0%
NYAGATARE	< 1 Day	35	51.5%
	1 - 7 Days	28	41.2%

	8 -14 Days	4	5.9%
	15 - 21 Days	1	1.5%
		68	100.0%
RUHANGO	< 1 Day	21	46%
	1 - 7 Days	19	41%
	8 -14 Days	3	7%
	22 - 30 Days	1	2%
	> 30 Days	2	4%
		46	100%
RUSIZI	< 1 Day	22	55.0%
	1 - 7 Days	16	40.0%
	8 -14 Days	2	5.0%
		40	100.0%

RICE

DISTRICT	TIME	FREQUENCY	PERCENT
GISAGARA	< 1 Day	54	56.8%
	1 - 7 Days	29	30.5%
	8 -14 Days	4	4.2%
	15 - 21 Days	6	6.3%
	22 - 30 Days	1	1.1%
	> 30 Days	1	1.1%
		95	100.0%
HUYE	< 1 Day	71	70%
	1 - 7 Days	26	25%
	8 -14 Days	4	4%
	15 - 21 Days	1	1%
		102	100.0%
KAYONZA	< 1 Day	72	58.1%

	1 - 7 Days	48	38.7%
	8 -14 Days	4	3.2%
		124	100.0%
KIREHE	< 1 Day	110	68.3%
	1 - 7 Days	28	17.4%
	8 -14 Days	10	6.2%
	15 - 21 Days	6	3.7%
	> 30 Days	7	4.3%
		161	100.0%
NYAGATARE	< 1 Day	62	48.1%
	1 - 7 Days	60	46.5%
	8 -14 Days	3	2.3%
	15 - 21 Days	4	3.1%
		129	100.0%
RUHANGO	< 1 Day	65	52.8%
	1 - 7 Days	45	36.6%
	8 -14 Days	9	7.3%
	22 - 30 Days	3	2.4%
	> 30 Days	1	0.8%
		123	100.0%
RUSIZI	< 1 Day	118	73.3%
	1 - 7 Days	42	26.1%
	8 -14 Days	1	0.6%
		161	100.0%

IRISH PATATOES

DISTRICT	TIME	FREQUENCY	PERCENT
GICUMBI	< 1 Day	83	61.0%
	1 - 7 Days	49	36.0%

	8 -14 Days	3	2.2%
	22 - 30 Days	1	0.7%
		136	100.0%
MUSANZE	< 1 Day	15	8.6%
	1 - 7 Days	85	48.6%
	8 -14 Days	27	15.4%
	15 - 21 Days	27	15.4%
	22 - 30 Days	17	9.7%
	> 30 Days	4	2.3%
		175	100.0%
NGORORERO	< 1 Day	46	58.2%
	1 - 7 Days	30	38.0%
	8 -14 Days	2	2.5%
	> 30 Days	1	1.3%
		79	100.0%
NYABIHU	< 1 Day	10	5.7%
	1 - 7 Days	62	35.4%
	8 -14 Days	43	24.6%
	15 - 21 Days	20	11.4%
	22 - 30 Days	24	13.7%
	> 30 Days	16	9.1%
		175	100.0%

Famers satisfaction with the price fixed for crops by district

		MAIZE		RICE		IRISH POTATOES	
		Freq	Percent	Freq	Percent	Freq	Percent
GAKENKE	Very dissatisfied	29	16.2%				

	Dissatisfied	50	27.9%			
	Neither satisfied nor dissatisfied	80	44.7%			
	Satisfied	19	10.6%			
	Very satisfied	1	0.6%			
	Total	179	100.0%			
	Score	2.51	50.3%			
GICUMBI	Very dissatisfied	11	11.3%		11	7.1%
	Dissatisfied	21	21.5%		31	20.1%
	Neither satisfied nor dissatisfied	38	39.0%		60	39.0%
	Satisfied	25	25.6%		46	29.9%
	Very satisfied	0	0.0%		7	4.5%
	Total	98	100.0%		154	100.0%
	Score	2.74	54.8%		3.06	61.3%
GISAGARA	Very dissatisfied	28	30.4%	20	20.6%	
	Dissatisfied	20	21.7%	37	38.1%	
	Neither satisfied nor dissatisfied	13	14.1%	25	25.8%	
	Satisfied	23	25.0%	11	11.3%	
	Very satisfied	8	8.7%	4	4.1%	
	Total	92	100.0%	97	100.0%	
	Score	2.60	52.0%	2.40	48.0%	
HUYE	Very dissatisfied	13	26.0%	36	36.7%	
	Dissatisfied	18	36.0%	32	32.7%	
	Neither satisfied nor dissatisfied	6	12.0%	16	16.3%	
	Satisfied	11	22.0%	10	10.2%	
	Very satisfied	2	4.0%	5	5.1%	
	Total	50	100.0%	98	100.0%	
	Score	2.42	48.4%	2.17	43.5%	

KAYONZA	Very dissatisfied	4	10.3%	3	2.4%			
	Dissatisfied	6	15.4%	30	24.0%			
	Neither satisfied nor dissatisfied	6	15.4%	11	8.8%			
	Satisfied	19	48.7%	70	56.0%			
	Very satisfied	4	10.3%	11	8.8%			
	Total	39	100.0%	125	100.0%			
	Score	3.33	66.7%	3.45	69.0%			
KIREHE	Very dissatisfied			37	92.5%			
	Dissatisfied			5	12.5%			
	Neither satisfied nor dissatisfied			3	7.5%			
	Satisfied			2	5.0%			
	Very satisfied			0	0.0%			
	Total			40	100.0%			
	Score			1.60	32.0%			
MUSANZE	Very dissatisfied					132	70.2%	
	Dissatisfied					36	19.1%	
	Neither satisfied nor dissatisfied					11	5.9%	
	Satisfied					7	3.7%	
	Very satisfied					2	1.1%	
	Total					188	100.0%	
	Score					1.46	29.3%	
NGORORERO	Very dissatisfied	13	9.8%			3	4.0%	
	Dissatisfied	7	5.3%			5	6.7%	
	Neither satisfied nor dissatisfied	35	26.5%			25	33.3%	
	Satisfied	65	49.2%			34	45.3%	
	Very satisfied	12	9.1%			8	10.7%	
	Total	132	100.0%			75	100.0%	

	Score	3.42	68.5%		3.52	70.4%
NYABIHU	Very dissatisfied				107	59.1%
	Dissatisfied				51	28.2%
	Neither satisfied nor dissatisfied				15	8.3%
	Satisfied				8	4.4%
	Very satisfied				0	0.0%
	Total				181	100.0%
	Score				1.58	31.6%
NYAGATARE	Very dissatisfied	13	17.3%	3	2.4%	
	Dissatisfied	16	21.3%	23	18.1%	
	Neither satisfied nor dissatisfied	9	12.0%	10	7.9%	
	Satisfied	34	45.3%	58	45.7%	
	Very satisfied	3	4.0%	34	26.8%	
	Total	75	100.0%	127	100.0%	
	Score	2.97	59.5%	3.79	75.7%	
RUHANGO	Very dissatisfied			15	78.9%	
	Dissatisfied			1	5.3%	
	Neither satisfied nor dissatisfied			1	5.3%	
	Satisfied			1	5.3%	
	Very satisfied			1	5.3%	
	Total			19	100.0%	
	Score			1.53	30.5%	
RUSIZI	Very dissatisfied	3	7.1%	16	10.3%	
	Dissatisfied	6	14.3%	16	10.3%	
	Neither satisfied nor dissatisfied	5	11.9%	31	20.0%	
	Satisfied	19	45.2%	37	23.9%	
	Very satisfied	9	21.4%	55	35.5%	

	Total	42	100.0%	155	100.0%
	Score	3.60	71.9%	3.64	72.8%

Reactions of farmers who are not satisfied with the price of their crops(Irish Potatoes)

DISTRICT	REACTION	FREQUENCY	PERCENT
GICUMBI	I have stopped growing the crop	3	2%
	I have no alternative and will continue growing	119	98%
	Total	122	100%
MUSANZE	I have stopped growing the crop	38	21.6%
	I have no alternative and will continue growing	138	78.4%
	Total	176	100.0%
NGORORERO	I have stopped growing the crop	1	3.0%
	I have no alternative and will continue growing	32	97.0%
	Total	33	100.0%
NYABIHU	I have stopped growing the crop	33	18.3%
	I have no alternative and will continue growing	147	81.7%
	Total	180	100.0%

Time taken to get paid after getting the authorisationof harvesting your crops

		MAIZE		RICE		IRISH POTATOES	
		Freq	Percent	Freq	Percent	Freq	Percent
GAKENKE	The same day	54	30.0%				
	After one week	99	55.0%				
	Between 1-2 weeks	18	10.0%				
	Between 3 weeks - 1 months	7	3.9%				
	Beyond 1 month	2	1.1%				
	Never got paid	0	0.0%				
	Never, I got back my crops	0	0.0%				

	Total	180	100.0%			
GICUMBI	The same day	31	35.2%		104	67.5%
	After one week	43	48.9%		36	23.4%
	Between 1-2 weeks	1	1.1%		2	1.3%
	Between 3 weeks - 1 months	7	8.0%		6	3.9%
	Beyond 1 month	1	1.1%		1	0.6%
	Never got paid	5	5.7%		0	0.0%
	Never, I got back my crops	0	0.0%		0	0.0%
	Total	88	100.0%		154	100.0%
GISAGARA	The same day	41	40.2%	7	7.3%	
	After one week	14	13.7%	2	2.1%	
	Between 1-2 weeks	1	1.0%	5	5.2%	
	Between 3 weeks - 1 months	8	7.8%	14	14.6%	
	Beyond 1 month	19	18.6%	63	65.6%	
	Never got paid	2	2.0%	5	5.2%	
	Never, I got back my crops	17	16.7%	0	0.0%	
	Total	102	100.0%	96	100.0%	
HUYE	The same day	35	70.0%	15	15.3%	
	After one week	5	10.0%	24	24.5%	
	Between 1-2 weeks	4	8.0%	1	1.0%	
	Between 3 weeks - 1 months	1	2.0%	8	8.2%	
	Beyond 1 month	5	10.0%	49	50.0%	
	Never got paid	0	0.0%	0	0.0%	
	Never, I got back my crops	0	0.0%	0	0.0%	
	Total	50	100.0%	98	100.0%	
KAYONZA	The same day	5	12.5%	3	2.4%	
	After one week	4	10.0%	21	16.8%	
	Between 1-2 weeks	5	12.5%	15	12.0%	
	Between 3 weeks - 1 months	15	37.5%	46	36.8%	

	Beyond 1 month	8	20.0%	31	24.8%		
	Never got paid	1	2.5%	7	5.6%		
	Never, I got back my crops	2	5.0%	0	0.0%		
	Total	40	100.0%	125	100.0%		
KIREHE	The same day			1	2.5%		
	After one week			1	2.5%		
	Between 1-2 weeks			6	15.0%		
	Between 3 weeks - 1 months			30	75.0%		
	Beyond 1 month			2	5.0%		
	Never got paid			0	0.0%		
	Never, I got back my crops			0	0.0%		
	Total			40	100.0%		
MUSANZE	The same day					22	13.1%
	After one week					31	18.5%
	Between 1-2 weeks					22	13.1%
	Between 3 weeks - 1 months					39	23.2%
	Beyond 1 month					52	31.0%
	Never got paid					1	0.6%
	Never, I got back my crops					1	0.6%
	Total					168	100.0%
NGORORERO	The same day	63	47.0%			40	54.8%
	After one week	55	41.0%			24	32.9%
	Between 1-2 weeks	7	5.2%			5	6.8%
	Between 3 weeks - 1 months	5	3.7%			3	4.1%
	Beyond 1 month	0	0.0%			1	1.4%
	Never got paid	4	3.0%			0	0.0%
	Never, I got back my crops	0	0.0%			0	0.0%
	Total	134	100.0%			73	100.0%
NYABIHU	The same day					8	4.8%

	After one week					22	13.1%
	Between 1-2 weeks					30	17.9%
	Between 3 weeks - 1 months					68	40.5%
	Beyond 1 month					35	20.8%
	Never got paid					2	1.2%
	Never, I got back my crops					3	1.8%
	Total					168	100.0%
NYAGATARE	The same day	5	6.7%	10	7.9%		
	After one week	18	24.0%	28	22.0%		
	Between 1-2 weeks	7	9.3%	5	3.9%		
	Between 3 weeks - 1 months	29	38.7%	46	36.2%		
	Beyond 1 month	14	18.7%	23	18.1%		
	Never got paid	0	0.0%	14	11.0%		
	Never, I got back my crops	2	2.7%	1	0.8%		
	Total	75	100.0%	127	100.0%		
RUHANGO	The same day			3	17.6%		
	After one week			0	0.0%		
	Between 1-2 weeks			0	0.0%		
	Between 3 weeks - 1 months			0	0.0%		
	Beyond 1 month			11	64.7%		
	Never got paid			3	17.6%		
	Never, I got back my crops			0	0.0%		
	Total			17	100.0%		
RUSIZI	The same day	10	23.8%	12	7.6%		
	After one week	21	50.0%	89	56.7%		
	Between 1-2 weeks	3	7.1%	16	10.2%		
	Between 3 weeks - 1 months	8	19.0%	17	10.8%		
	Beyond 1 month	0	0.0%	15	9.6%		
	Never got paid	0	0.0%	5	3.2%		

Never, I got back my crops	0	0.0%	3	1.9%
Total	42	100.0%	157	100.0%

Perished crops due to delay in harvest authorisation process(in Kgs)

MAIZE

DISTRICT	QTY IN KG	FREQUENCY	TOTAL QTY
GAKENKE	15	1	15
	50	3	150
	80	1	80
	100	1	100
	400	1	400
	5000	1	5000
	TOTAL	8	5745
GICUMBI	20	1	20
	400	1	400
	TOTAL	1	420
GISAGARA	50	2	100
	100	2	200
	430	1	430
	TOTAL	5	730
HUYE	20	1	20
	50	1	50
	TOTAL	2	70

RICE

DISTRICT	QTY IN KG	FREQUENCY	TOTAL QTY
GISAGARA	50	1	50
	70	1	70
	100	2	200

	300	1	300
	TOTAL	5	620
HUYE	10	1	10
	20	1	20
	50	2	100
	60	1	60
	TOTAL	5	190
RUHANGO	30	1	30
	50	1	50
	100	1	100
	250	1	250
	TOTAL	4	430

IRISH PATATOES

DISTRICT	QTY IN KG	FREQUENCY	TOTAL QTY
MUSANZE	50	3	150
	100	10	1,000
	150	1	150
	190	1	190
	200	12	2,400
	250	1	250
	300	11	3,300
	400	6	2,400
	500	16	8,000
	600	2	1,200
	700	5	3,500
	800	2	1,600
	900	1	900
	1,000	3	3,000

	1,500	4	6,000
	2,000	5	10,000
	2,500	2	5,000
	3,000	2	6,000
	5,000	3	15,000
	8,000	1	8,000
	TOTAL	91	78,040
NYABIHU	70	1	70
	75	1	75
	100	11	1,100
	150	2	300
	200	6	1,200
	300	13	3,900
	400	4	1,600
	500	19	9,500
	600	3	1,800
	700	8	5,600
	800	2	1,600
	900	2	1,800
	1,000	11	11,000
	1,500	1	1,500
	2,000	7	14,000
	2,300	1	2,300
	3,000	5	15,000
	5,000	2	10,000
	6,000	1	6,000
	7,000	2	14,000
	10,000	2	20,000
	15,000	1	15,000
	TOTAL	104	137,345

Locating major loopholes in the production process (planting, harvesting and selling)

		AT THE LEVEL OF COOPERATIVE	AT THE LEVEL OF AGRO-DEALERS	AT THE LEVEL OF LOCAL AUTHORITIES	OTHERS	NONE	TOTAL
MAIZE PLANTING	N	305	176	18	134	325	958
	%	31.8%	18.4%	1.9%	14.0%	33.9%	100.0%
RICE PLANTING	N	317	57	19	73	481	947
	%	33.5%	6.0%	2.0%	7.7%	50.8%	100.0%
IRISH POTATOES PLANTING	N	286	223	8	52	104	673
	%	42.5%	33.1%	1.2%	7.7%	15.5%	100.0%
MAIZE HARVESTING	N	199	19	29	51	536	834
	%	23.9%	2.3%	3.5%	6.1%	64.3%	100.0%
RICE HARVESTING	N	264	53	24	37	492	870
	%	30.3%	6.1%	2.8%	4.3%	56.6%	100.0%
IRISH POTATOES HARVESTING	N	276	121	15	17	205	634
	%	43.5%	19.1%	2.4%	2.7%	32.3%	100.0%
MAIZE CROP SELLING	N	166	254	15	76	300	811
	%	20.5%	31.3%	1.8%	9.4%	37.0%	100.0%
RICE CROP SELLING	N	205	362	13	35	285	900
	%	22.8%	40.2%	1.4%	3.9%	31.7%	100.0%
IRISH POTATOES CROP SELLING	N	349	310	16	30	104	809
	%	43.1%	38.3%	2.0%	3.7%	12.9%	100.0%

Major types of loopholes faced by farmers in the crop production process

PRODUCTION PROCESS	LOOPHOLE	FREQ.	PERCENT
MAIZE PLANTING	Delay in getting seeds and fertilisers	143	25.3%
	Expensive fertilisers	120	21.2%

MAIZE HARVESTING	Neither seeds no fertilisers provided by cooperatives	97	17.1%
	Lack of appropriate seeds (imbuto nziza)	14	2.5%
	Long distance to the harvest drying facility	122	40.4%
	Long distance to the harvest collection center	26	8.6%
	No right to partial harvest for subsistence purpose (food)	18	6.0%
	Harvest damaged (rotten) in collect centers	13	4.3%
	Small harvest store facility	13	4.3%
MAIZE SELLING	Inadequate price	291	54.6%
	Lack of crop market	155	29.1%
	Delay in payment for harvest/crop	27	5.1%
RICE PLANTING	Lack of water	116	45.0%
	Lack of seeds	17	6.6%
RICE HARVESTING	Tiny drying facility	157	47.6%
	Lack of freedom (kwigenga???)	31	9.4%
	All harvest collected (no right to keep a portion for household meal)	24	7.3%
RICE SELLING	Delay in payment	249	43.2%
	Inadequate price for the harvest	195	33.8%
	ikibazo ni rwiyemeza mirimo	32	5.5%
	Lack of market	30	5.2%
IRISH POTATOES PLANTING	Lack of seeds	180	58.3%
	Lack of fertilisers	78	25.2%
IRISH POTATOE HARVESTING	Issues to get harvest authorisation (uruhushya rwo gusarura)	147	55.9%
	Loss of harvest (rotten)	19	7.2%
IRISH POTATOE SELLING	Inadequate price for the harvest	306	57.7%
	Delay in payment	117	22.1%
	Lack of freedom to manage the production process	39	7.4%

(nta burenganzira tugira ku byacu)		
Market issue	29	5.5%

Probit Model Regression Results

	(1)
VARIABLES	**Dummy: Crops perished this year**
Gender Dummy (1=Male, 0=Female)	0.270**
	(0.112)
Disability Dummy (1=Disabled, 0=not disabled)	-0.277**
	(0.115)
Age	-0.00412
	(0.00503)
Household members	-0.0122
	(0.0276)
Distance to market	0.00262*
	(0.00139)
Number of cattle	-0.0790
	(0.0581)
Using government land (1=yes, 0=no)	-0.929***
	(0.204)
Land in ha	0.00149*
	(0.000823)
Producing maize (1=yes, 0=no)	-0.239*
	(0.142)
Waiting time for authorization longer than 5 days (1=yes, 0=no)	1.438***

	(0.106)
District Dummy (1=Musanze, 0=Others)	1.861***
	(0.550)
Producing irish potatoes (1=yes, 0=no)	0.778***
	(0.175)
Interaction term (Musanze*Potatoes)	-1.271**
	(0.563)
Constant	-2.045***
	(0.298)
Observations	2,301

Pseudo R2 = 0.4981

Probit Model Regression Results

	(1)
VARIABLES	Waiting time for authorization longer than 5 days
Gender Dummy (1=Male, 0=Female)	0.177***
	(0.0643)
Disability Dummy (1=Disabled, 0=not disabled)	-0.457***
	(0.0820)
Age	-0.00506*
	(0.00273)
Household members	0.00875
	(0.0156)
Distance to market	-0.00233***
	(0.000862)
Number of cattle	-0.0160
	(0.0181)

Using government land (1=yes, 0=no)	-0.292***
	(0.102)
Land in ha	0.00124**
	(0.000499)
Producing maize	-0.0666
	(0.0747)
District Dummy (1=Musanze, 0=Others)	0.949*
	(0.492)
Producing irish potatoes (1=yes, 0=no)	0.597***
	(0.1000)
Interaction term (Musanze*Potatoes)	-0.332
	(0.504)
Constant	-0.545***
	(0.169)
Observations	2,301

Pseudo R2 = 0.1139

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