

**European Union's External Cooperation Programme
for Rwanda**

Baseline Report on the Rwanda Horticulture Organisations Survey

Final Report

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Development Board (NAEB)



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TABLE OF CONTENTS

Acknowledgments.....	1
Table of Contents.....	iv
Abbreviations	vii
1 Introduction & Summary Results.....	1
2 Methodology & Survey Implementation.....	3
3 Survey Results.....	8
3.1 Horticulture Organisations, Membership and Geographic Distribution	9
3.2 Horticulture Sales, Production and Area Cultivated.....	15
3.2.1 Horticulture Sales Values and Volumes by Crop.....	16
3.2.2 Horticulture Sales Value, Volumes and Area Planted by Province and District.....	17
3.2.3 Processed Horticulture Products	20
3.3 Horticulture Markets	23
3.3.1 Market Outlets for Horticulture Products	24
3.3.2 Destination Markets for Horticulture Products.....	25
3.3.3 Current and Future Market Requirements	27
3.4 Accessing Agricultural Inputs, Services & Information	31
3.4.1 Intensification through Improved Inputs.....	32
3.4.2 Access to Inputs & Services.....	33
3.4.3 Sources of Information for Improved Horticulture Practices & Management.....	37
3.5 Spatial Location and Competing Land Use.....	39
3.5.1 Valley and Hillside Location of Horticulture Crops.....	40
3.5.2 Distance from Paved Road.....	42
3.5.3 Competing for Land.....	44
3.6 Age of Organisation, Gender Balance and Partnerships.....	46
3.6.1 Comparison of Older and Younger Organisations	47
3.6.2 Gender and Horticulture Organisations	48
3.6.3 Partners & Support for Horticulture Organisations.....	51
3.7 Largeholder Horticulture Producers.....	53
3.7.1 Largeholder Horticulture Producers	54
3.7.2 Largeholder Crop Production	55
4 Future Tracking of Horticulture Organisations.....	57
ANNEXES	59
Table 1. Horticulture Sales Value (FRW) and Volumes (Kg) by Crop.....	60

Table 2.	Horticulture Sales Value (FRW) by Crop and Province.....	61
Table 3.	Horticulture Crop Production (Kg) Sales (Kg) & Difference between Production and Sales by Crop Category, Province and District.....	62
Table 4.	Horticulture Sales Value (FRW) by Crop Category, Province and District.....	63
Table 5.	Horticulture Sales Volume (Kg) by Crop Category, Province and District.....	64
Table 6.	Horticulture Area Cultivated (Ha) by Crop Category, Province and District.....	65
Table 7.	Value (FRW) and Volume (Kg) of Horticulture Processed Products by Province and District.....	66
Table 8.	Horticulture Sales Value (FRW) by Crop and Province.....	67
Table 9.	Horticulture Sales Volume (Kg) by Crop and Province.....	68
Table 10.	Greenhouse and Other Buildings (SqM) Property of Horticulture Organisations (Shown by Building Type, Province and District)	69
Table 11.	Use of Irrigation Systems by Horticulture Organisations (Shown by System Type, Province and District).....	70
Table 12.	Characteristics of Loans to Organisations Over Past 24 Months (Shown by Province and District)	71
Table 13.	Selected Organisational Characteristics by Percent Female Membership Quartiles.....	72
Table 14.	Location of Land on Hillside by Selected Categories of Land Use.....	73
Table 15.	Production Area (Ha) by Location on the Hillside and Province	73
Table 16.	Sources of Information Received by Organisations by Type of Information.....	74
Table 17.	Horticulture Crops Produced by Individual Largeholder Producers.....	75
Table 18.	Value (FRW) and Area (Ha) in Horticulture by Individual Largeholder Producers (Shown by Province and District).....	76
Map 1.	Organisations by Area (Ha) in Production	77
Map 2.	Organisations by Main Source of Revenue and Level of Revenue.....	78
Map 3.	Horticulture Organisations by Main Crop Sold	79
Map 4.	Cabbage Sales by District and Level of Sales (FRW Tertiles).....	80
Map 5.	Carrot Sales by District and Level of Sales (FRW Tertiles).....	81
Map 6.	Eggplant Sales by District and Level of Sales (FRW Tertiles).....	82
Map 7.	Onion Sales by District and Level of Sales (FRW Tertiles).....	83
Map 8.	Sweet Pepper Sales by District and Level of Sales (FRW Tertiles).....	84
Map 9.	Tamarillo Sales by District and Level of Sales (FRW Tertiles).....	85
Map 10.	Tomato Sales by District and Level of Sales (FRW Tertiles).....	86
Map 11.	Other Vegetable Sales by District and Level of Sales (FRW Tertiles).....	87
Map 12.	Passion Fruit Sales by District and Level of Sales (FRW Tertiles).....	88
Map 13.	Pineapple Sales by District and Level of Sales (FRW Tertiles)	89

Map 14. Other Fruit Sales by District and Level of Sales (FRW Tertiles).....	90
Map 15. Specialty Crops Sales by District and Level of Sales (FRW Tertiles)	91
Map 16. Organisations by Percent Female Membership (Quartiles).....	92
Questionnaire (Annex)	
RHOS Database Variables and Parameters by Questionnaire Section (Annex)	

ABBREVIATIONS

AGRER	AGRER Etudes et Conseils
ECO3	European Consultants Organisation
EU	European Union
F&V	Fruits and Vegetables
FRW	Rwandan Francs
Ha	Hectares
HACCP	Hazard Analysis and Critical Control Points
HO	Horticultural Organisation
IPM	Integrated Pest Management
Kg	Kilogram
MINAGRI	Ministry of Agriculture and Animal Resources
MT	Metric Ton
NAEB	National Agriculture Export Board
NCCR	Confederation of Coops of Rwanda
RCA	Rwanda Cooperative Agency
RDB	Rwanda Development Board (RDB)
RHIO	Rwanda Horticulture Inter-Professional Organisation
RHOS	Rwanda Horticulture Organisations Survey
RPSF	Rwanda Private Sector Federation
USD	US Dollars
SqM	Square Meters

1 INTRODUCTION & SUMMARY RESULTS

The 2013 Baseline Survey of Horticultural Cooperatives and Other Producer Organisations and Groups in Rwanda, (hereafter referred to as the Rwanda Horticulture Organisations Survey, or RHOS), is an initiative organised by the Rwanda Ministry of Agriculture and Animal Resources (MINAGRI) and the National Agriculture Export Development Board (NAEB). Funding support for the RHOS is provided by the Delegation of the European Union to Rwanda. It is designed to include all horticultural cooperatives/associations and companies, as well as a summary descriptive listing of all largeholder individual farmers, in all 30 of Rwanda's districts.

The overarching goal of the RHOS is to support market-oriented agricultural production, job creation, poverty reduction and nutritional security in Rwanda via a vibrant and sustainable development of the horticulture sector. More specifically, the survey is designed to assess the current state of horticultural production, processing and marketing (including fruits, vegetables, mushrooms, flowers, essential oils and nuts), carried out collectively by cooperatives, associations and private horticultural companies (hereafter referred to as "horticulture organisations"). Of special interest are the capacities of these groups and companies, the constraints they face, and the kinds of interventions and support that will lead to greater development of Rwanda's horticulture sector.

This report presents scientifically valid statistical information that will enable Rwanda's horticulture stakeholders to improve sector planning, management, investment and policy decision-making, all crucial steps to achieving one of its chief *Vision 2020* goals—making horticulture one of the country's leading economic drivers and a major contributor to the improved nutritional status of its people.

Also, as part of an evidence-based framework for development, the survey data provided in the tables, figures and maps in this report will serve as a baseline against which future growth of the horticulture sector can be compared and evaluated. Simply the number of organisations today, or their revenue from sales or the markets they serve, when compared to the same figures three or five or ten years from now will be telling. Such comparisons will enable Rwanda to gauge the pace of its development and the success of its policies and investments.

This report presents and discusses many of the defining parameters of Rwanda's horticulture sector, including production and sales of horticulture crops and products, area cultivated, geographic dispersion of organisations, market standards, gender of membership, and so on. However, it is important to note that as a baseline report its main goal is to provide a broad-based snapshot of the sector, not an in-depth analysis of its intricate details and myriad policy questions. At the same time, the great volume of data contained in the database are highly organised, clearly labelled and in a format that can be readily explored and applied to queries and detailed analyses from users in the future.

The report is organised into two major sections. The first is a review of the methodology employed through the development and fielding of the survey. The second is a presentation and summary discussion of many of the more fundamental and sector-defining data tables, figures and maps. Other basic tables are contained in the annex to the report, along with the survey

questionnaire (English version). Table 1 shown here below contains an “Executive Quantitative Summary,” presenting at a glance many of the key findings of the survey by province.

TABLE 1

Executive Quantitative Summary of Results by Province						
Characteristic	Province					
	Rwanda	Kigali	South	West	North	East
Type of Organisation						
Total Organisations	1,155	110	267	294	206	278
Nbr of Production Organisations	1,127	107	260	284	202	274
Nbr of Marketing Organisations	14	3	1	8	1	1
Nbr of Processing Organisations	14	-	6	2	3	3
Registration						
Registered Organisations	804	85	174	177	152	216
Percent Registered	72.3%	82.5%	68.8%	62.3%	76.0%	79.4%
Certification						
Nbr Industry Certified Orgs	34	1	4	2	23	4
Percent Certified	2.9%	0.9%	1.5%	0.7%	11.2%	1.4%
Membership						
Nbr of Members	60,657	5,237	16,931	11,922	9,395	17,172
Percent Female Members	56.5%	63.3%	60.7%	61.5%	47.3%	51.8%
Land Area in Horticulture						
Total (Ha)	6,278	308	1,056	1,061	497	3,357
Fruits (Ha)	3,627	22	296	520	259	2,530
Vegetables (Ha)	2,574	259	758	510	221	826
Flowers (Ha)	77	27	1	31	17	1
Horticulture Production (Kg)						
Total (Kg)	29,728,155	3,799,510	9,170,344	5,672,678	3,220,142	7,865,481
Fruits (Kg)	5,935,558	38,896	1,102,286	1,255,357	1,678,631	1,860,388
Vegetables (Kg)	23,532,832	3,728,784	8,062,910	4,283,265	1,488,737	5,969,136
Other Hort (Kg)	259,765	31,830	5,148	134,056	52,774	35,957
Horticulture Sales (FRW)						
Total FRW	5,334,993,326	468,777,144	1,980,773,200	1,313,044,544	694,985,745	877,412,693
Fruits (FRW)	1,081,249,203	11,955,100	56,990,600	325,134,150	506,129,600	181,039,753
Vegetables (FRW)	4,125,193,962	428,505,044	1,918,677,000	920,408,033	180,175,945	677,427,940
Other Hort (FRW)	128,550,161	28,317,000	5,105,600	67,502,361	8,680,200	18,945,000
Principle Crops Sold						
1st crop	Tomato	French beans	Onion	Tomato	Passion fruit	Tomato
2nd crop	Onion	Tomato	Sweet pepper	Passion fruit	Tamarillo	Pineapple
3rd crop	Sweet pepper	Cabbage	Tomato	Carrot	Pineapple	Onion
4th crop	Passion fruit	Eggplant	Eggplant	Tamarillo	Tomato	Cabbage
Processing						
Processing (Kg/Lt)	2,146,371	1,392,500	79,590	15,740	645,449	13,092
Processing (FRW)	1,794,356,400	1,461,580,000	40,195,000	22,620,000	262,294,000	7,667,400
Destination Markets						
Pct sold to own district	76.3%	61.8%	82.1%	76.0%	71.7%	80.3%
Pct sold to own province	6.4%	9.9%	8.0%	5.5%	6.4%	4.3%
Pct sold to other province	3.7%	11.6%	2.0%	3.5%	4.2%	2.2%
Pct sold to Kigali	11.6%	16.6%	7.1%	9.9%	15.5%	12.6%
Pct sold to African Countries	1.8%	0.0%	0.8%	4.9%	1.9%	0.3%
Pct sold to MidEast and Europe	0.2%	0.0%	0.0%	0.3%	0.4%	0.4%
Greenhouses						
Orgs with Greenhouses	82	16	34	4	11	17
SqM in Greenhouse	27,678	9,452	9,094	1,184	4,318	3,630
Largeholder Producers						
Area in horticulture crops (Ha)	712	38	142	60	49	424
Crop/Product sales (FRW)	527,525,142	85,114,200	87,343,942	64,199,200	40,198,000	250,669,800

2 METHODOLOGY & SURVEY IMPLEMENTATION

The major steps and activities undertaken in the development, fielding and data entry phases of the survey, including obstacles encountered and solutions found, are documented in this section of the baseline report. The section is organised in chronological fashion as illustrated in Figure 1, starting with the initial review of documents and data, through the consultative stages with stakeholders, training of supervisors and pretesting of the survey instrument and on to the data entry, processing and analysis of the data. The goal of this section is to provide users of the survey data with a thorough understanding of where the data come from and a review of some of the more important considerations in their use and interpretation.

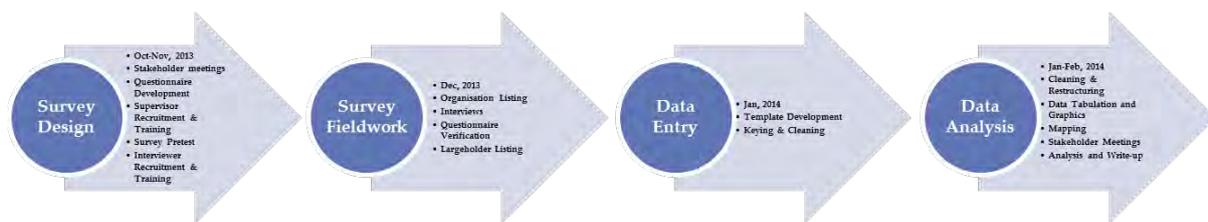


FIGURE 1

Desk study. The initial search and review of documents and data on Rwanda horticulture served to orient the advisory team to recent developments in the sector and to draw on the experiences of similar surveys in other countries. During this short phase the team was able to compile a listing of key constraints to horticultural growth identified in previous sector reports and studies. These constraints were condensed and categorised and served as the basis for several important themes in the questionnaire, such as “access to markets,” “competencies,” and “organisational management.” The review documents also helped to clarify the roles and responsibilities of the various institutional partners and other stakeholders. This phase was especially important in that it enabled the design team to understand what steps had already been taken (e.g., the previous horticulture listing) and to develop a forward-looking approach that builds on these previous efforts.

Consultations with stakeholders on survey design, methodology and calendar. Meetings were held with a range of horticulture stakeholders, particularly in NAEB and MINAGRI, the primary organisers of the activity. Among these consultations was the project “kick-off” meeting held at the Ministry of Agriculture. During this period the team was successful in collectively mapping out the initial survey design and methodology.

One of the more important conceptual issues taken under consideration was how to define “farmer organisations” for purposes of the survey. There are many farmer groups in Rwanda that claim to be legitimate “farmer associations,” but many are very small operations that are not registered or otherwise recognised as associations. There are others that are bona fide associations but horticulture may be just a very small production effort squeezed between maize or rice or other harvests that are the main focus of the organisation. To concentrate efforts uniquely on those organisations (and largeholder individuals) engaging in horticulture production, processing and marketing as a primary activity, the team established the following set of criteria, only one of which had to be satisfied to qualify for inclusion in the survey:

1. Horticulture in at least 0.5 hectare in collectively operated open field horticulture over the past 12 months.
2. Horticulture production in at least 100 m² of collectively operated greenhouses over the past 12 months.
3. Horticulture gross sales of 5,000,000 FRW over the past 12 months.

Individual largeholder producers were also included in a separate listing of basic parameters if they met these criteria, with the exception of the individual pyrethrum producers. There are believed to be thousands of commercial pyrethrum producers that would meet these criteria and their inclusion would result in a very lopsided survey that would deviate from the core interest of the baseline, which is collective production and processing of fruits, vegetables, cut flowers and other specialty crops.

Collaborative development of the survey questionnaire. The development of the survey questionnaire, annexed here in English, constitutes one of the more intensive activities completed by the team. Its development was an iterative process that engaged stakeholders in question by question discussions and debate. While a few items were not included in the survey, due mainly to cost and time constraints, most of the major data components were retained in the final questionnaire. There are 14 sections to the questionnaire, each one dealing with a different priority aspect of horticulture production, processing and marketing. They include:

1. Organisation Identification
2. Organisation Basic Characteristics
3. Horticulture Production & Post-Harvest Handling
4. Horticulture Processing
5. Markets & Marketing
6. Land Access for Horticulture Production & Processing
7. Access to Inputs and Services
8. Buildings & Equipment
9. Credit & Finances
10. Technical and Managerial Competencies
11. Certifications
12. Sources of Horticulture Information
13. Partners & Support
14. Organisational Structure & Management

The questionnaire is organised as a structured interview with most questions being pre-coded for more expedient data processing. Interviewer instructions are included for most questions in the survey instrument itself. This helped to reduce errors significantly. The survey also includes some of the more advanced survey techniques such as Likert-type scaling and contingent valuation, both of which are designed to elicit more sensitive and nuanced variations in responses. Filter questions and skip patterns are also part of the instrument's structure, helping to reduce the length of the interview in the field and to streamline data entry and cleaning in the home office.

The questionnaire was translated into Kinyarwanda for the pretest and for final fielding of the survey. Efforts were made to ensure accurate translations, a common source of error.

Development of the Interviewer/Supervisor Field and Training Guide. The Field and Training Guide is a useful document that provides practical information to assist project interviewers and supervisors (and data users) in the implementation of the survey. And it serves as a form of survey documentation as it provides a summary of the survey goals and methodology, including content, field structure and timeframe. It also reviews the primary responsibilities of the interviewers and supervisors, with guidance and expectations intended to improve the success of the interview. It introduces the interviewers and supervisors to the various types of questions found on the survey instrument and also provides a section-by-section review of those particular questions that need additional explanation and attention by the field team.

The Guide was translated into Kinyarwanda and was used extensively in the supervisor training program described below. The English version of the Guide can be obtained from NAEB upon request.

Consultations with the National Institute of Statistics Rwanda (NISR). By a Rwandan law, all national level surveys require approval (a “visa”) from the National Institute of Statistics. In a meeting with a NISR official the team was instructed in the submission process. A letter from the responsible agency, NAEB in this case, was required, along with copies of the questionnaire, survey methodology, survey calendar, and other documents. The NISR visa was received prior to fielding the survey.

Recruitment of supervisory team (province and national level). To ensure the highest quality of the survey, it was decided to set the number of enumerators at 36, one per district (30) plus an additional six that were provisionally engaged as substitutes. To manage these district-level enumerators the team recruited five province-based supervisors whose main responsibility was to support and monitor the enumeration at the province level, ensure quality control at all stages and assist with the training of enumerators. Their detailed responsibilities are listed in the Interviewer/Supervisor Field and Training Guide.

Supervisor training. A two day training session was conducted with the province supervisors during which they were informed about the survey and trained on the content of the questionnaire and how it was to be administered. Special attention was given to their quality control responsibilities and steps required in monitoring the performance of the interviewers. After the classroom training, the supervisors obtained practical training by participating as interviewers in the pretest of the questionnaire in two districts. They also contributed to the post-pretest review and revision as described below.

Implementation of the survey pretest. In the interest of improving the questionnaire and assessing the field conditions, a survey pretest was organised and carried out in two districts (Bugesera and Rulindo) known to be very active in the horticulture sector. The pretest was done on 10 HOs in one of the districts each day. Five survey teams were organised in each district with each survey team being comprised of two individuals (on average), a province supervisor and one of the members of the national team of NAEB, MINAGRI and external advisors. Teams visited one HO in the morning and another in afternoon for each of the two days. In total 20 HOs were visited and 20 questionnaires were completed.

Review and revision of the survey questionnaire & guide based on pretest results. A full day meeting was organised with the survey team, including technical staff from MINAGRI and NAEB as well as all five supervisors, to review and discuss the results of the pretest fielded during the previous two days. The result was a significant reformatting of several sections of the survey instrument that helped to reduce interview times from the 2½ - 3 hour range down to 2 - 2½ hours. This was an important savings and did not sacrifice much in terms of useful data. Much of the savings came from more efficient skip patterns and through the elimination of superfluous questions that did not add new information value to the questionnaire.

Survey implementation. The survey fieldwork was implemented in a series of organized steps including recruitment of field personnel, enumerator training, a listing of organisations and individual largeholder producers and completion of the interviews. Each of these steps is summarized in the paragraphs below.

Recruitment and training. The survey was fielded by a team of 36 district-level enumerators (30 district enumerators plus six “replacements”), five province-level supervisors and a national supervisor. Candidates for the supervisors and enumerators were recruited, with assistance from NAEB and MINGARI, from among their former employees and enumerators with experience in horticulture. Before their deployment in the field, enumerators received intensive interviewer training for a period of three days (18-20 November, 2013) to obtain a proper understanding of the questionnaire, field guide, methodology of the survey and their responsibilities. The field work was completed in two phases: (1) listing procedure, and (2) face-to-face interviews. The field work was closely monitored by a consulting advisor and two NAEB horticultural officers through a program of regular field visits to ensure that all activities were carried as accurately and on schedule.

Listing. The listing phase of the survey took six days to complete (21-26 November 2013). During this phase the enumerators, supported by their provincial supervisors, travelled to all 30 districts to identify and list all horticultural cooperatives/associations, private companies and individual large farmers. The listing phase was then finalised and the lists were checked and compiled by supervisors and entered into a control spreadsheet for final review and confirmation at the national level. A meeting was subsequently convened with all enumerators and supervisors to plan for the actual fieldwork which began December 2, 2013.

As a result of the listing exercise and continuing updates, the numbers of HOs identified came to nearly three times the number initially listed (398) by MINAGRI/NAEB in 2010. There had been much change in this dynamic sector over the three years since the initial listing. In total, 1,155 cooperatives/groups and private companies and 2,438 individual farmers were identified.

However, since it was not known how many of the individual farmers on the initial list actually fulfilled the three-pronged criteria for inclusion, the team was instructed to start by interviewing the cooperatives, groups and companies. During this interview period enumerators were instructed to continue to check with the individual largeholder farmers to confirm whether they met the criteria for inclusion. This confirmation was completed by seeking information from sector agriculture officers and from representatives of the interviewed cooperatives from the same sector.

Interviews. Following discussions among supervisors, enumerators, and MINAGRI/NAEB officers on numerous logistics arrangements, it was concluded that the most efficient way to carry out interviews and supervision was to send each entire province level team into one or two districts at a time. That way, every week, each team of 6-8 enumerators and one provincial supervisor was able to work together to complete interviews in two districts. With all five teams on the job simultaneously, 80% of the districts were completed in a 3 week period from December 2–22, 2013. The remaining HOs were interviewed between December 24, 2013 and January 3, 2014. In total, 1,155 HOs were interviewed in all 30 districts. During this period the team also completed interviews with 550 individual largeholder farmers that met the selection criteria. The largeholder farmers each received a basic set of questions to identify them, their locations, the main crops grown, area (Ha) cultivated, square meters in greenhouses and total sales.

It is important to note that cooperation among horticulture organisations was exemplary, with very few refusals. The field team is confident that they were successful in identifying and interviewing nearly 100% of producer organisations and most cooperatively run processors. However, it is important to note among processors that several private sector processors, particularly in Kigali province declined to be interviewed. Thus, national-level estimates of processed products (especially juices) are believed to be underestimated in the survey data. A supplementary post-survey follow-up with the major processors in Kigali and adjustments based on the NAEB Horticulture Processor Database, 2013, enabled more accurate national estimates of processed product in this report.

Prior to data entry, supervisors took time to check all questionnaires and correct errors that were identified.

Data entry. Data processing is a critical element of all large scale surveys. The team took care in developing the survey instrument to ensure rapid data entry and cleaning and to keep data entry errors to a minimum. Pre-coding, skip patterns and standardised response structure are some of the techniques used to achieve the goals of accuracy and timeliness. A data entry program developer and a team of 10 experienced data entry clerks were engaged to complete the data entry phase in early January. Data were entered using EpiData software and then exported to SPSS for further cleaning, restructuring and analysis.

3 SURVEY RESULTS

The survey results reviewed in this section provide a broad overview of the horticulture sector in Rwanda. The data, presented mostly as tables, figures and maps, are intended to give the reader an accurate, generalized understanding of the major parameters of the horticulture sector, how it is organised, where product is sold, the challenges faced, and the direction it is headed. As the title suggests, it is a baseline report, one that will enable sector planners and managers to track changes and compare with data in the future and with data from other countries in similar stages of development. The findings presented include many of the priority variables and estimates identified by stakeholders.

There are over 600 variables in the survey, each with its own significance. While it is not possible to present and discuss each of these variables in this baseline report, summary statistics for each variable can be found in annex to this report. Also provided in annex is a series of “most essential” tables and maps. These include major estimates of production and sales by district, by province and by crop (or crop group). For convenience, these tables and maps are listed in the report’s table of contents. Other tables and analyses not included here can be obtained upon request to NAEB/MINAGRI. The data files have been organised and labelled in such a way as to facilitate such requests and more in-depth analysis.

TABLE 2

Levels of Observation and Analysis from the RHOS Questionnaire			
Questionnaire Section	Questions on...	Level	N
Section 1	ID and diverse areas (main questionnaire)	Organisation	1,155
Section 2	Organisational Characteristics	Organisation	1,155
Section 3	Crop Production, Inputs Use and Sales	Crop	3,171
Section 4	Processed Products Production and Sales	Product	40
Section 5	Markets & Marketing	Organisation	1,155
Section 6	Land by Use and Ownership Category	Land Category	17,325
Section 7	Access to Inputs & Services	Input/service	26,565
Section 8	Buildings & Equipment	Organisation	1,155
Section 9	Credit & Finances	Loan	184
Section 10	Technical and Managerial Competencies	Competency	13,860
Section 11	Industry Certifications	Organisation	1,155
Section 12	Access & Sources of Information	Information type	25,410
Section 13	Partners and External Support	Support type	1,224
Section 14	Organisational Strength & Cohesiveness	Strength indicator	16,821
Largeholder survey	ID and diverse areas (main questionnaire)	Largeholder	550
Largeholder survey	Crops grown	Crop	974

The RHOS data base is far reaching and rich in the information it contains. The data base is comprised of 10 interrelated files corresponding to each of the levels of observation incorporated into the questionnaire (see Table 2). While most variables are at the organisation level (N=1,155), others are at the crop level (Section 3 of the questionnaire), at the product level (Section 4), and so forth. All ten files are linked by the “KeyID” variable, making analysis among and between files possible. The analyses presented in the subsections that follow include data from all ten of these files, and many draw upon multiple files, as necessary.

3.1 Horticulture Organisations, Membership and Geographic Distribution

Section Contents

Organisations by District	10
Growth of Horticulture Organisations.....	11
Organisational Status & Primary Activity	11
Membership Composition	14

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 1	ID and diverse areas (main questionnaire)	Organisation	1,155
Section 2	Organisational Characteristics	Organisation	1,155

Section Tables, Figures and Maps

Figure 2.	Distribution of Horticulture Organisations Province and District	10
Figure 3.	Number of Horticulture Organisations by Year Established.....	11
Map 1.	Organisation Type by District	12
Table 3.	Type and Primary Activity of Organisation by Primary Source of Revenue	13
Table 4.	Male and Female Membership by Organisation Type.....	14



Organisations by District. The Rwanda Horticulture Organisations Survey, 2013, listed and then interviewed a total of 1,155 organisations, believed to be a near complete enumeration of all such organisations in existence in Rwanda at the time. As detailed in the methodology section, interviewers conducted a complete search and listing of all the horticulture organisations in their districts, with the assistance of the district level horticulture agents. Figure 2 reports the distribution of these organisations across the country, revealing that all provinces and districts are engaged in a significant level the collective production of horticulture crops and products. All provinces except for Kigali are home to at least 200 organisations, with the West containing the most at 294 organisations. Kigali Province, with only three districts, has 110 horticulture organisations. The average number of organisations found per province is 231.

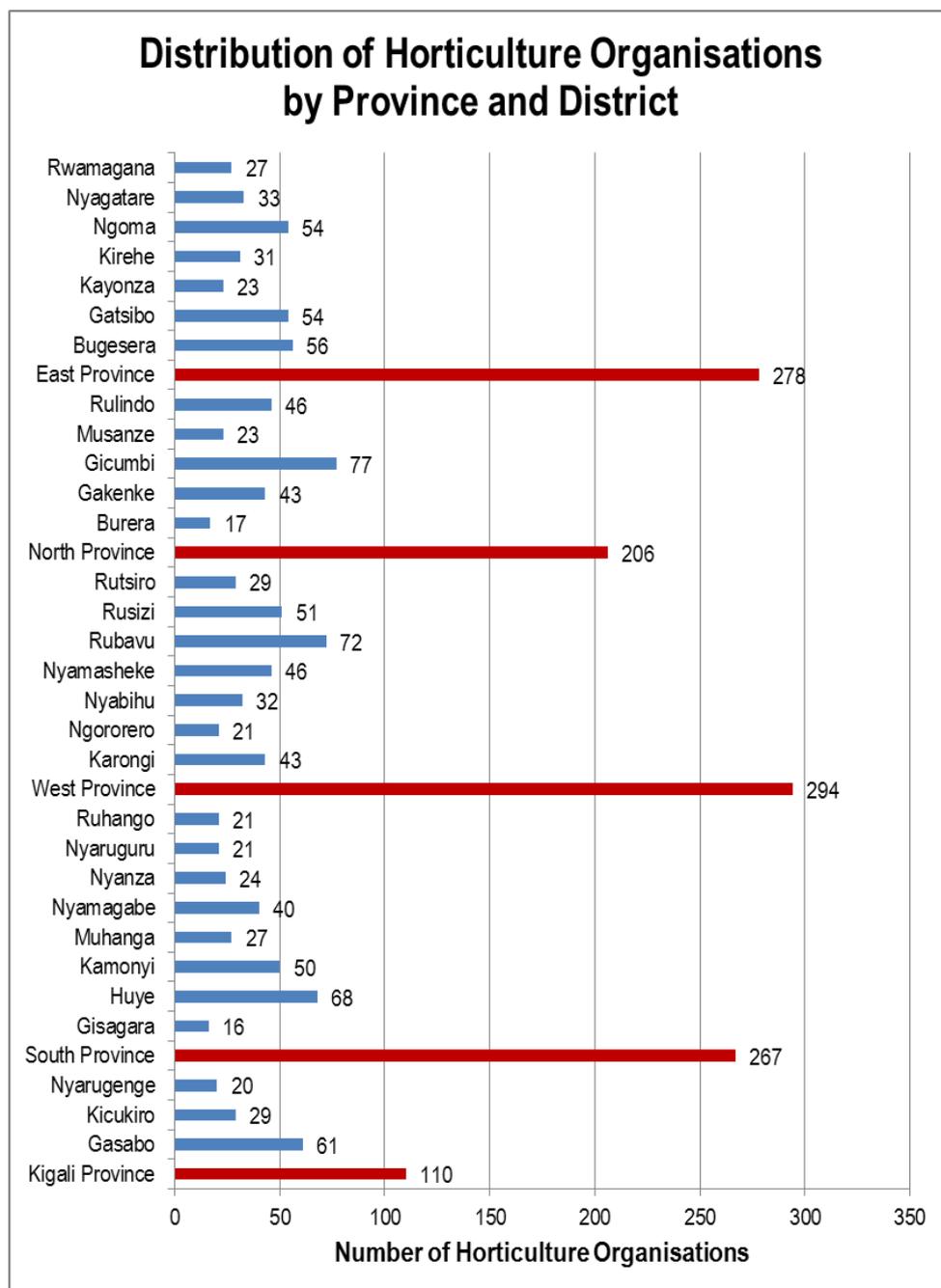


FIGURE 2

Viewed by district, one finds that the numbers of organisations ranges from 16 in Gisagara to 77 in Gicumi, with an overall average of 38.5 organisations per district. Every province has districts with organisations numbering both above and below that average, a good indicator of the pervasiveness of horticulture production, processing and marketing in Rwanda.

Growth of Horticulture Organisations. Collective production of horticulture crops in Rwanda dates back to the 1960s for some of the more established cooperatives and associations. Figure 3 shows the progressive growth of horticulture organisations in since these early times. What is especially illuminating in this figure is that over half of the organisations in existence today have been established since 2010, and over 90% have formed since the year 2000. This development is a tribute to the Rwanda’s emphasis on horticulture as a cornerstone in the strategy to commercialise and modernise the country’s agricultural economy. Clearly, efforts to promote the horticulture sector have paid off in terms of the sheer numbers of organisations and their members.

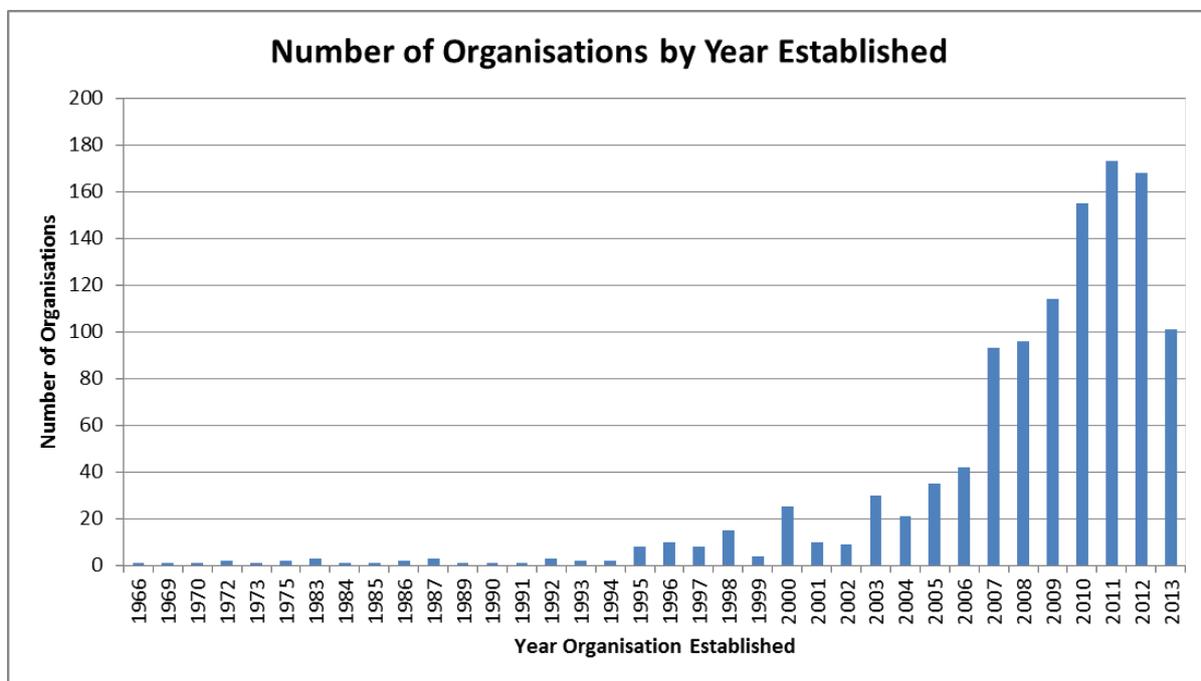


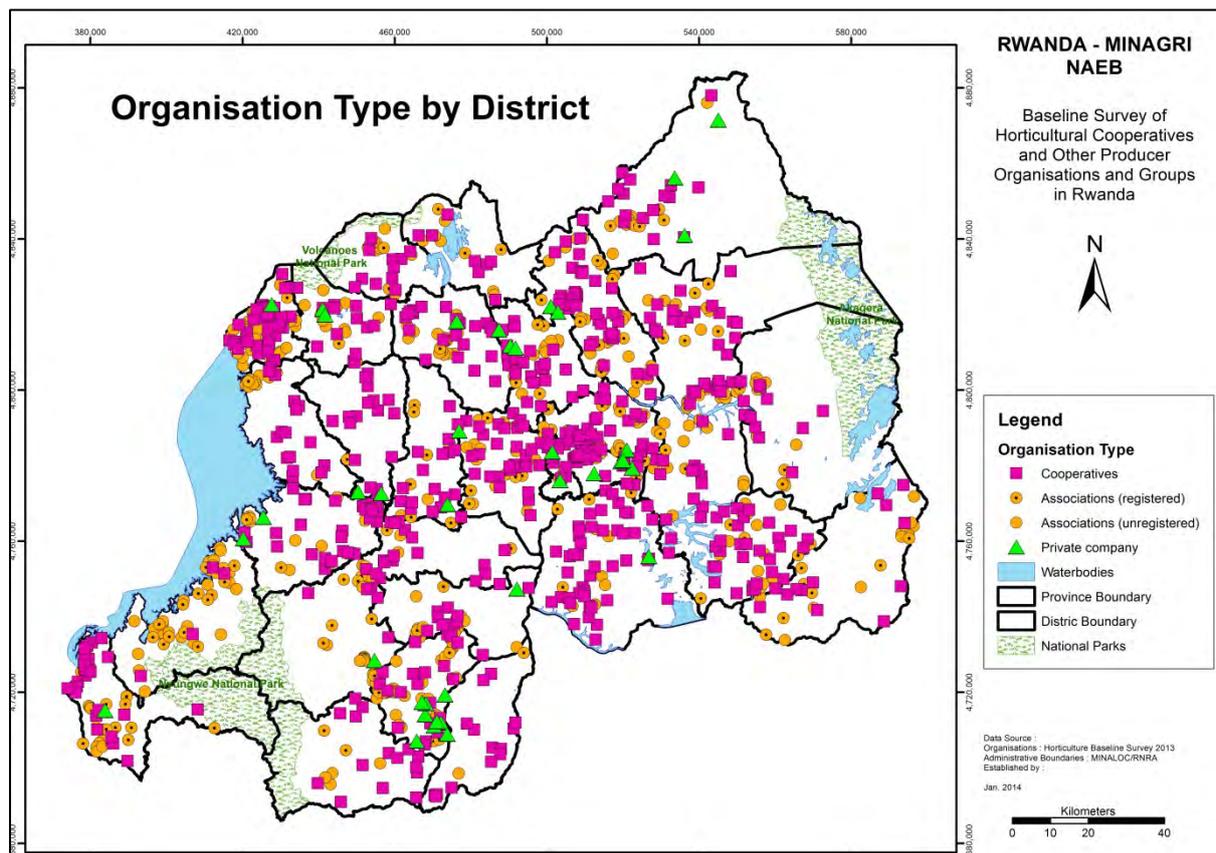
FIGURE 3

Organisational Status & Primary Activity. Horticulture organisations in Rwanda can be defined and categorised in many different ways. One of the more important groupings often used for legal and administrative purposes is whether and how organisations are registered, either locally or nationally. The major types of registration are: registered cooperatives, registered associations and private sector companies. There are also a sizable number of associations that are unregistered.

How these different types of organisations are dispersed geographically can be viewed in Map 1. One is struck by the extent to which organisations of all types are represented in virtually every corner of the country. While there are recognisable clusters of organisations around Kigali, Gisenyi/Goma, along the southern border at Bukavu and elsewhere in the country, no discernible concentration of cooperatives versus associations, registered or unregistered, becomes immediately apparent. By contrast, private sector companies do tend to cluster, with

groupings near the urban centres of Kigali and Butare, and a smaller cluster in Rulindo and adjacent districts in the North.

Most horticulture organisations in Rwanda are officially registered, with over half (52.6%) of the horticulture organisations in Rwanda being registered cooperatives and another 16.7% being registered as associations. The smallest group of registered organisations is the 38 private sector companies (3.3% of organisations). There are 313 (27.1%) organisations that are not registered.



MAP 1

How do these groups differ in terms of their primary sources of revenue? One concludes from Table 3 that cooperatives and associations tend to be very similar in what they do. Approximately 35% of all three groups derive their primary earnings from fruit sales, and another 60% primarily from vegetables. We know from parallel analyses (not shown here) that cooperatives and registered associations tend to be older organisations, where unregistered associations are younger, most having been established only in the past three years. We expect that many of the associations that are unregistered today will be registered with one of the registering entities (NCRR, RHIO, RCA, RDB) in the coming years, as they mature and show greater sustainability for the long term.

Private companies differ from the cooperatives and associations in their greater likelihood of being in the business of horticulture processing, such as the production of juices and preserves, but like cooperatives and associations, the production of fruits and vegetables is far and away their most remunerative revenue source. As we will see later on, fruit and vegetable processing

tends to be done by private sector firms, most often located in relative proximity to urban markets. The greater capital requirements and level of technical expertise demanded are among the reasons that private sector companies constitute a larger share of organisations engaged in processing.

The lower portion of Table 3 is similarly revealing in terms of primary domains of activity, with just under two-thirds of production and marketing organisations being engaged primarily in vegetables and just over a third engaged in fruits. As will be seen in the following sections, this pattern is by no means constant across the country. There is considerable regional specialisation in where fruits and vegetables are produced.

TABLE 3

Type and Primary Activity of Organisation by Primary Source of Revenue						
Primary Source of Revenue (based on sales - FRW)						
Organisation Characteristic		Fruits	Vegetables	Other hort crops	Hort processed products	Total
Organisation Type						
Cooperatives (reg)	N	216	369	13	9	607
	%	35.6%	60.8%	2.1%	1.5%	100.0%
Associations (reg)	N	68	121	4	-	193
	%	35.2%	62.7%	2.1%	0.0%	100.0%
Associations (not reg)	N	121	189	2	1	313
	%	38.7%	60.4%	0.6%	0.3%	100.0%
Private companies	N	9	23	2	4	38
	%	23.7%	60.5%	5.3%	10.5%	100.0%
Other	N	2	1	1	-	4
	%	50.0%	25.0%	25.0%	0.0%	100.0%
Total	N	416	703	22	14	1,155
	%	36.0%	60.9%	1.9%	1.2%	100.0%
Primary Activity						
Production	N	411	694	22	-	1,127
	%	36.5%	61.6%	2.0%	0.0%	100.0%
Processing	N	-	-	-	14	14
	%	0.0%	0.0%	0.0%	100.0%	100.0%
Marketing	N	5	9	-	-	14
	%	35.7%	64.3%	0.0%	0.0%	100.0%
Total	N	416	703	22	14	1,155
	%	36.0%	60.9%	1.9%	1.2%	100.0%

Membership Composition. Table 4 provides a look at the how the membership of each type of cooperative and association is distributed by gender. Overall, there are 60,657 members of horticulture cooperatives and organisations in Rwanda. Cooperatives are the largest category by membership at 67.1%, with registered and unregistered association members comprising the remaining 32.9% in roughly equal proportions. Women in horticulture outnumber men by a significant margin, accounting for 56.5% of the total membership compared to men at 44.5%. While that pattern holds across all types of organisations, women’s membership (as a percentage of total membership) is the highest in registered organisations (65.0%) and the lowest in cooperative organisations at 54.5%.

TABLE 4

Male and Female Membership by Organisation Type (Cooperatives and Associations)							
Organisation Type	Male Membership		Female Membership		Total Membership		Percent Female
	N	%	N	%	N	%	
Cooperative reg	18,497	70.1%	22,196	64.8%	40,693	67.1%	54.5%
Association reg	3,752	14.2%	6,966	20.3%	10,718	17.7%	65.0%
Association not reg	4,148	15.7%	5,098	14.9%	9,246	15.2%	55.1%
Total	26,397	100.0%	34,260	100.0%	60,657	100.0%	56.5%

3.2 Horticulture Sales, Production and Area Cultivated

Section Contents

3.2.1	Horticulture Sales Values and Volumes by Crop	16
3.2.2	Horticulture Sales Value, Volumes and Area Planted by Province and District	17
3.2.3	Processed Horticulture Products	20

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 3	Crop Production, Inputs Use and Sales	Crop	3,171
Section 4	Processed Products Production and Sales	Product	40
Section 6	Land by Use and Ownership Category	Land Category	17,325

Section Tables, Figures and Maps

Figure 4.	Percentages of Total Value (FRW) of Horticulture Sales by Crop Category.....	16
Figure 5.	Value of Crops (FRW) Sold by Horticulture Organisations.....	18
Figure 6.	Volume of Crops (Kg) Sold by Horticulture Organisations	19
Figure 7.	Area (Ha) Planted in Crops by Horticulture Organisations	20
Table 5.	Processed Product Sold (Kg/Lt) and Value of Sales.....	21
Figure 8.	Production (Lt/Kg) of Processed Products by Horticulture Organisations	22



3.2.1 Horticulture Sales Values and Volumes by Crop

One of the unknowns in Rwanda's horticulture sector has been the extent of production and sales by organisations. The RHOS, 2013, goes a long way toward filling that information gap. In this section we report on sales value (FRW) and volume (Kg) by crop and crop category. Annex Table 1 breaks out these important sales figures in absolute terms through summed estimates and as organisational means, but also in relative terms as a percentage of total horticulture sales and volumes. Total horticulture gross sales by organisations in Rwanda is estimated at 5.33 billion FRW (USD 7.84m), with mean sales of 1.68 million FRW per organisation (USD 2,475) and of 98,240 FRW in average gross sales per producer group member.

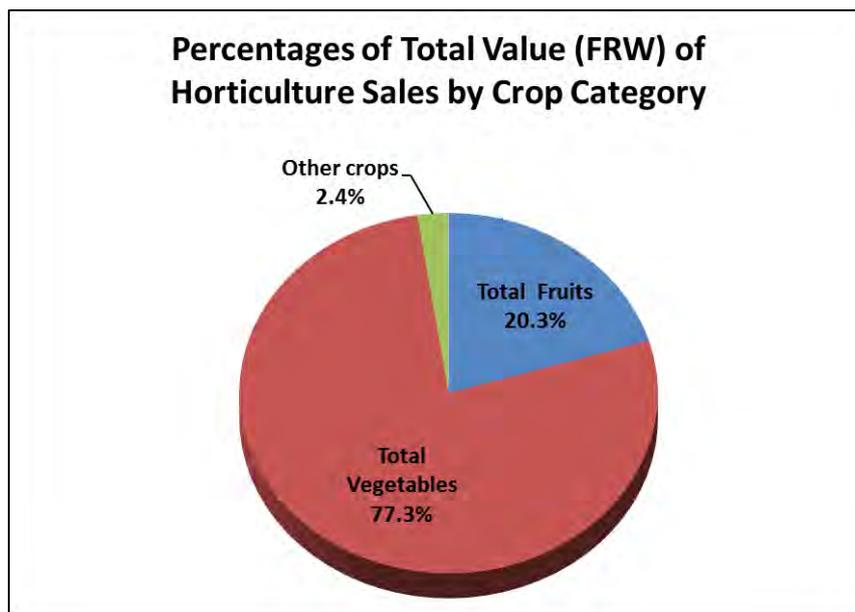


FIGURE 4

The overarching observation from this table is summarised in Figure 4 which demonstrates the preponderance of production and sales of vegetables relative to fruits and other horticulture crops. Vegetables account for nearly 4 of every 5 FRW earned by the country's horticulture organisations. As we will see later on, this pattern is also found among individual largeholder producers. One of the major advantages of vegetable crops is that they are less perishable than most fruit crops and thus are less susceptible to rot and other damage in storage and transportation. One may also conclude that the emphasis on vegetable production is a function of market demand. On a price per kilo basis, vegetables (e.g., cabbage vs. tamarillo) tend to be more affordable, particularly in local destination markets, than are most fruits. We will come back to a review of price differences later in the report.

Comparing sales (FRW) and volume (Kg) of product, one can see that there is a relatively close correlation between the two. For example, fruits constitute 20.3% of total volume and 20.0% of sales. Vegetables are 77.3% and 79.2% respectively. This pattern breaks down with higher value crops such as nuts and flowers which have relatively low volume but command 3-4 times the price.

What are the predominant crops produced in each of these major crop categories? Among fruits, pineapple is by far the largest in volume at 12.8 percent of total horticultural production. Passion fruit (3.5%) and tamarillo (2.6%) come in a distant second and third. No other fruit crops produced by organisations in Rwanda amount to more than a few tenths of a percent of total national horticulture production. As a function of sales value, the big three (pineapple, passion fruit and tamarillos) constitute nearly 95% of all fruit sales. The difference, when compared to volumes, is that the order of importance shifts so that passion fruit and tamarillos take on a relatively higher position due to their higher per kilo cost.

Vegetables sales by organisations are dominated by tomatoes (28.4%), onions (14.2%) and cabbages (12.8%), by volume of total horticulture production. These crops are also very important in terms of sales value, but sweet pepper surfaces as one of the more important vegetable crops (11.5%) of all sales due to its high price per kilo. Other crops that round out the vegetable segment of horticulture markets are carrot and eggplant, commanding 4.5% and 6.3% of market share, respectively. Mushrooms are noteworthy not because of volume or total sales, both of which are small; rather, they are a crop that is unusually light in weight, yet relatively high in price. Mushroom sales value is five times its volume in percentages. Crops with high price to weight ratios can be more competitive in distant, higher-end markets, particularly for highly perishable products that require air transport.

Rwanda's horticultural organisations have not yet embraced the production of low-volume, high-value specialty products such as herbs & spices, nuts, and flowers (fresh-cut and industrial). Together, all of these specialty crops amount to less than one percent of total horticulture production volume. Yet their sales value is close to 2.5% of organisational horticulture sales. Nearly half of this value comes from macadamia nut, and that is produced by just three organisations; over half of this macadamia production comes from a single private sector enterprise.

3.2.2 Horticulture Sales Value, Volumes and Area Planted by Province and District

Horticulture production is highly dispersed in Rwanda. All 30 of the country's districts are home to a variety of organisations that produce fruits vegetables and other products. While production is dispersed across the country, that is not to say that it is uniform either in terms of volumes produced or in which crops are grown, processed and/or marketed. A detailed table showing crop sales by province and district (Table 4) can be found in Annex 1. Highlights from that table are provided in the present section.

We start with a comparison of overall value of horticultural sales by province. As Figure 5 shows, the highest overall value of production comes from the South and West provinces, together with nearly 3.3 billion FRW in sales. Both of these provinces stand out in the value of their vegetable production. But that is only part of the story. While the South and West provinces are highly productive, their production is concentrated in a small number of high-producing districts. In the South, nearly all horticulture sales (91.8%) are concentrated in Kamonyi where exceptionally large volumes of cabbage, onion, sweet pepper and French bean are produced. And in the West, over half of the region's sales are in Rusizi district. Both Kamonyi

and Rusizi stand out entirely in their preponderance of vegetable sales, particularly cabbage, onion, sweet pepper in Kamonyi and tomato in Rusizi. These district level concentrations of horticulture crops are consistent with data reported in 2008 by RHODA on tomato production in Rwanda.

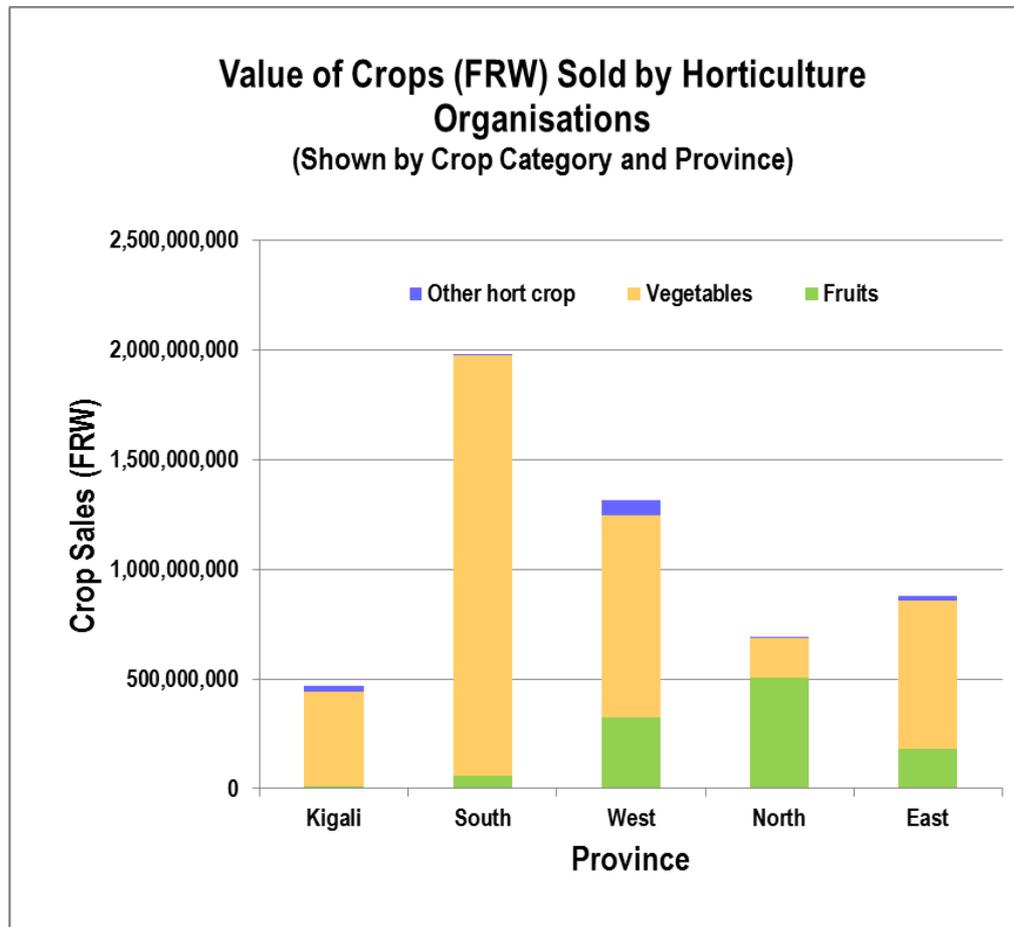


FIGURE 5

The North province is noticeably low in its vegetable production, the lowest of all five provinces. But this may be a reflection of the region’s ecological suitability and unique specialisation in Irish potato production. For the purposes of the RHOS, Irish potato is treated as a “field crop” like sweet potato, cassava and other tubers in Rwanda and thus was not included in the survey. There are hundreds (possibly thousands) of producer organisations focused on potato in the North province and this is undoubtedly one contributing factor to the low output of vegetable crops in the region.

However, despite low (non-potato) vegetable production, the North province boasts far and away the highest level of fruit sales at over 500 million FRW per year, nearly half of the entire country’s fruit sales. The prolific fruit production of two northern districts, Gakenke (in passion fruit and pineapple) and Gicumbi (in passion fruit) provide the vast majority of these sales.

The West province is the source of Rwanda’s most balanced production of horticulture crops. In addition to its strong fruit and vegetable production the West is Rwanda’s leader in the small but high value category of “other horticulture crops” including nuts, herbs & spices, flowers and other products. Over half (52.5%) of these specialty horticulture crops comes from the West

province. Two districts stand out in this domain, the first is Karongi which is home Rwanda’s largest macadamia nut producer and the other is Rubavu, a district whose organisations produce and sell more cut flowers than any other. Rubavu is also a leader in the sales in the herbs & spices category.

Being productive in terms of crop sales is not exactly the same thing as being productive in volumes of horticulture products. This is because prices for fruits and vegetables can vary a great deal, and prices are not necessarily stable, showing considerable variation from year to year and even from one district to another for the same crop. For this reason we include Annex Table 5, “Volume of Crops Sold (KG) by Horticulture Organisations in Rwanda,” broken out by crop category, province and district.” Overall, Rwanda’s organisations produced 29.7 thousand tons of horticultural products. Four fifths of that production is in vegetables and 20% is in fruits, closely mimicking the general proportions in FRW value reported earlier. A subtle difference is found in specialty products, where volume (weight) tends to be very low relative to price. Flowers and herbs & spices, for example, are products that are low in volume but high in price. Consequently these products only account for 0.9% of volume but 2.4% of sales value. Though small by comparison to fruits and vegetables production, this finding is highly instructive for strategic planning for horticulture exports where product weight is known to be a major barrier.

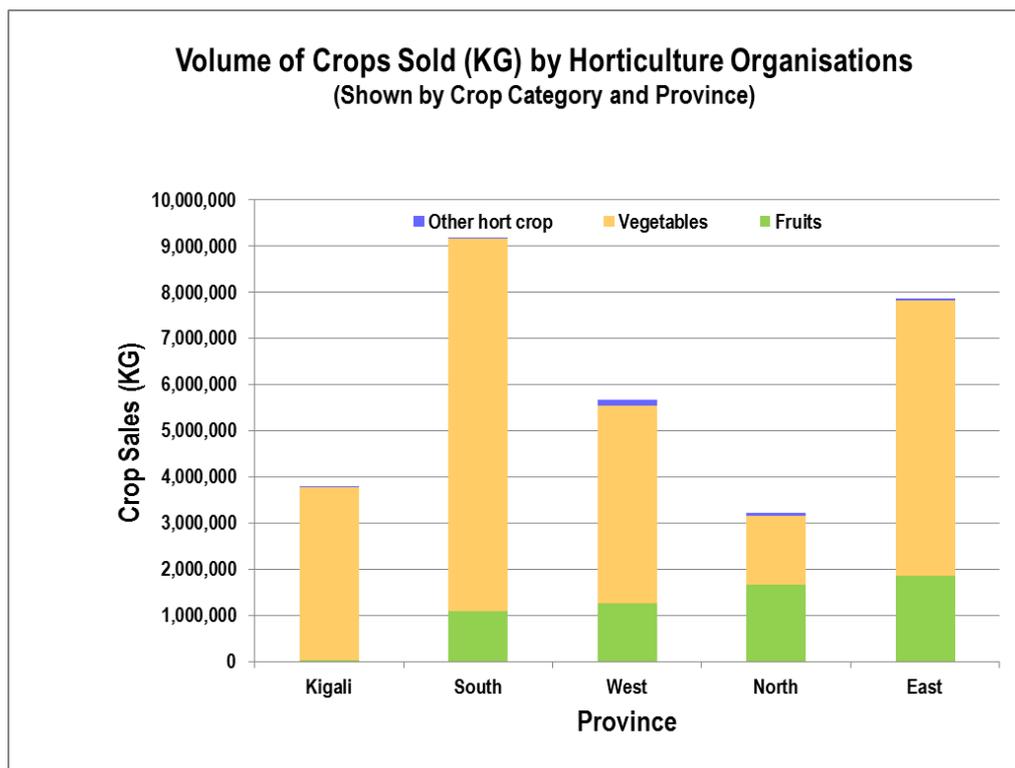


FIGURE 6

Perhaps the most visible difference in comparing the regional distribution of production volumes to sales value is seen in the East province where the volume of F&V leaps from 16.4% of value to 26.5% of weight (Annex Table 5). This is because the East tends to produce higher amounts of low-value fruits (e.g., pineapple) and vegetables (e.g., tomato) relative to other regions. We speculate that the greater availability of land in the East, as will be shown later in

this section, reduces the pressure on organisations and individual farmers to produce crops that yield a higher value per hectare.

The preponderance of pineapple production in the East emerges again in Figure 7, which breaks out area (Ha) by the major crop category and province. Overall, the East accounts for over half (53.5%) of all area in horticulture crops in Rwanda. The vast majority of that area is in pineapple. Vegetable crops in the East are also substantial and tomato comprises the largest share of that area. This regional comparison of area in crops also reveals fundamental differences in productivity. Production in the East province is more “extensive” than in other provinces. In other words, land area in horticulture is high, but measured in terms of volume, and especially of value, the East does not show a corresponding advantage. Indeed, as a function of value, the east region is close to the national average and in fruit production is on the lower end. Other provinces, such as the South, show a more “intensive” system of horticulture production with a modest 1,056 hectares in horticulture crops but producing more in volume and value than the East derives from three times the area—3,357 hectares in horticulture.

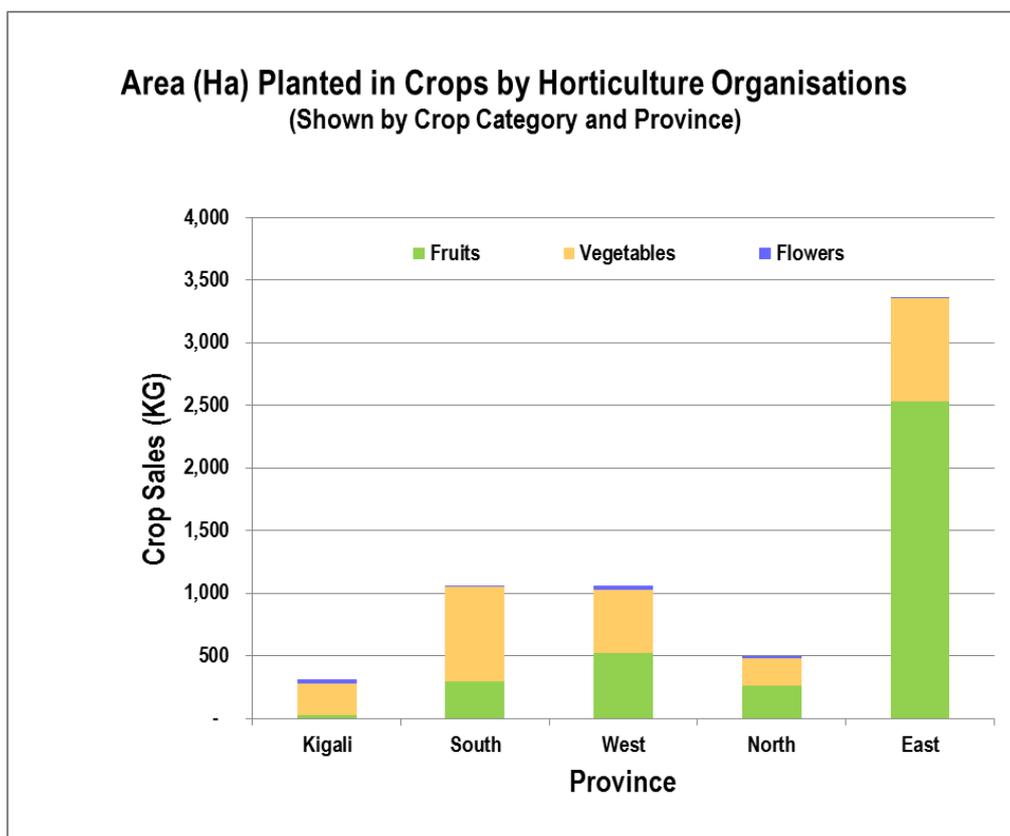


FIGURE 7

3.2.3 Processed Horticulture Products

Nearly all of Rwanda’s horticulture products are consumed fresh and are sold in local markets. Processed foods are available on market shelves in Kigali and elsewhere in Rwanda and some of them are produced in Rwanda. But most of those products are not locally produced, and fruit and vegetable products are few and far between. Of the 1,155 horticulture organisations in

Rwanda only 14 (1.2%) of them are primarily engaged in processing. This figure is adjusted upward to 20 when including processors in Kigali that declined to be interviewed.

As shown in Table 5, there are also very few processed products produced by organisations in Rwanda. Juices, mainly pineapple and passion fruit, are the one product that appears in significant volume at 2.05 million litres per year, with total sales of 1,794 million FRW. Juices comprise 92.8% of production and 95.8 percent of sales. Preserves (pineapple, strawberry, gooseberry) and dried fruit and nuts account for the small fraction remaining.

TABLE 5

Processed Product* Sold (Kg/Lt) and Value of Sales (FRW)					
Processed Product	N	Quantity Product Sold (Kg or Lt)		Value of Sales (FRW)	
		Kg/Lt	%	FRW	%
Total Hort Products	40	2,134,812	100.0%	1,794,356,400	100.0%
Dried Fruits	2	108	0.0%	701,400	0.0%
Juices	33	2,046,764	95.9%	1,665,745,000	92.8%
Preserves	4	1,340	0.1%	2,960,000	0.2%
Other Product	1	86,600	4.1%	124,950,000	7.0%

*Includes Kg and FRW reported for Kigali processors in Horticulture Processors Database, NAEB 2013

One point bears repeating from the earlier discussion of the survey fieldwork. It is that a number of major processors in Kigali province, notably those engaged in the production of juices, declined to be interviewed. Their production and sales figures are available for inclusion from the Horticulture Processors Database Report compiled by NAEB in 2013.

Broken out by province, one notes that processed horticultural products are concentrated in Kigali and to a lesser degree in the North province (Figure 8). This is due the location of juice processors in the two regions, particularly passion fruit and pineapple juices. It is not surprising to find that the North province is home to so much of Rwanda's juices as it is by far the most productive region in passion fruit (74% of national production).

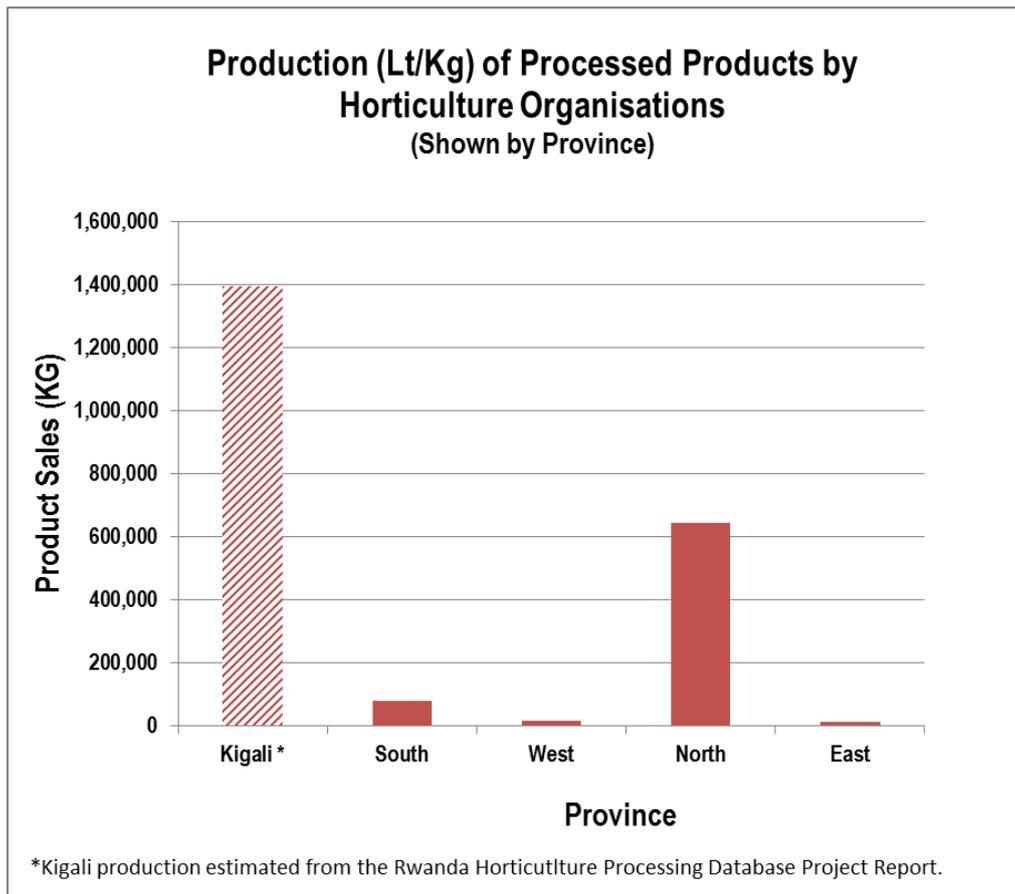


FIGURE 8

3.3 Horticulture Markets

Section Contents

3.3.1	Market Outlets for Horticulture Products	24
3.3.2	Destination Markets for Horticulture Products.....	25
3.3.3	Current and Future Market Requirements	27

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 3	Crop Production, Inputs Use and Sales	Crop	3,171
Section 4	Processed Products Production and Sales	Product	40
Section 5	Markets & Marketing	Organisation	1,155

Section Tables, Figures and Maps

Figure 9.	Organisation Crop Sales and Market Outlet.....	24
Figure 10.	Mean Market Prices by market Outlet and Crop Type.....	25
Figure 11.	Comparison of Current and Preferred Future Markets.....	26
Figure 12.	Standards Required by Current Buyers.....	27
Figure 13.	Most Important Challenges to Accessing Preferred markets in the Future	28
Table 6.	Organisations Certified or in the Process of Certification	29
Map 2.	Certification Status by District.....	30



3.3.1 Market Outlets for Horticulture Products

Organisations, be they producers, processors or marketing firms, establish marketing channels for their products. The four most common buyers for these horticulture products are wholesale traders, retail traders, processors and cooperatives, and other specialty retail markets. There are important differences among these buyers and the prices they pay for products. Wholesale traders are those who generally buy higher volumes of product and transport it to larger markets where they sell to other wholesalers or retail buyers. In terms of total sales, they are an important market channel for product from horticulture organisations in Rwanda, at 38% of product value. Retail traders are the largest buyer of product from organisations at 52% of product sales. They typically sell their product on retail markets either locally (same district or province) or in more distant markets such as Kigali. There is a very small buyer group which is comprised of processors and other cooperatives. These are wholesale buyers but often work under contract with the producer groups. Juice processors, for example often buy passion fruit or pineapple from producer organisations on seasonal contracts. The same tends to be true for tomato processors. The final buyer group is here classified as “specialty retail.” These buyers comprise 8% of the market and include supermarkets, hotels, schools, prisons and the like.

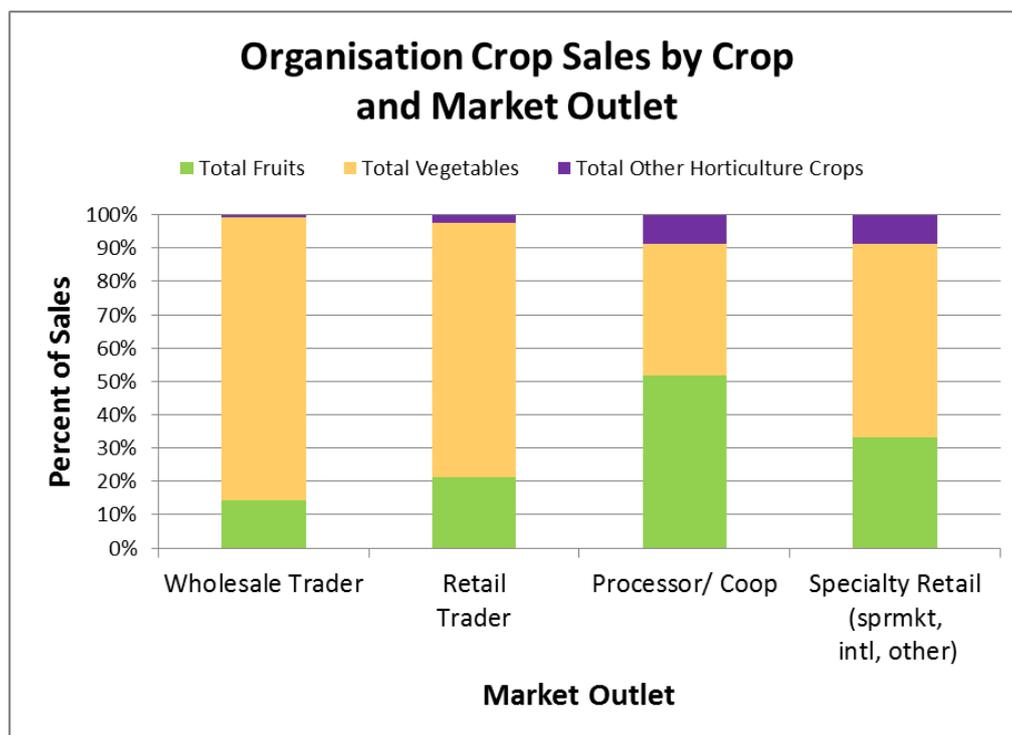


FIGURE 9

Figure 9 shows how these market channels differ by horticulture crop type. Organisations marketing their vegetables, for example, tend to lean toward wholesale buyers, where fruits are more often sought out by retail buyers (traders and specialty) and also constitute a significant share of sales to processors and other coops. This reflects the predominance of fruit juices in domestic agricultural processing. Other horticulture crops such as flowers, nuts, herbs & spices are rarely sold to wholesalers in Rwanda and instead lean heavily toward processors and specialty markets. As we will see later on, much of these specialty products are destined for

Kigali, where the specialty markets are more developed, a reflection of urban consumer preferences.

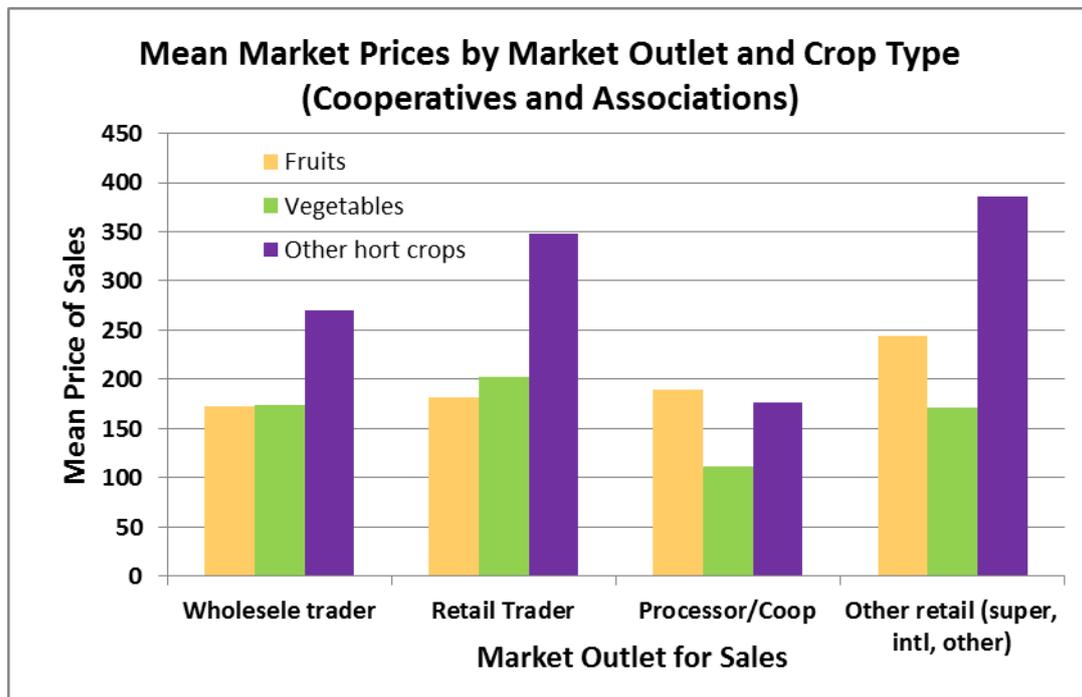


FIGURE 10

Comparing mean market price of sales for the four market outlets and three product categories in Figure 10, one notes a general trend across products moving from wholesale traders to retail traders to other retail/specialty. Sales to processors are among the lowest prices received. There are two important reasons for this. The first is that processors very often work on contract, and this is found in the present survey data as well. A contract price is often lower than spot market prices because it is a guaranteed price and thus comes with lower risk. The second reason is that processors often take lower quality product as its appearance does not have to please the consumer buying fresh product in the marketplace. These “seconds” are commonly used for juice and other processed products.

3.3.2 Destination Markets for Horticulture Products

The previous section reported on market channels that are defined by the buyers and the particular segments of the horticulture sector in which they operate. This section examines market destination, which, though related to market channels, also has a geographic component and a strong consumer demand component. While almost all sales by organisations are made at the wholesale level, to traders who then sell either on the wholesale or retail markets, organisations are generally very aware of where their product goes once sold, they know if it will be sold locally, to other provinces, to Kigali city, or through cross-border channels to Uganda, DRC, Burundi or elsewhere. They generally sell to traders whom they know and trust, and they have a good sense through experience and personal relationships in which destination markets their products are ultimately sold. Organisations were asked about the percentages of their current sales going to various destination markets, starting with the local district markets and all the way up the scale to international export markets such as Europe and the Middle East.

They were also asked to identify which markets they would *prefer* to sell to in the next three years. These market-specific percentages and preferred markets are averaged across all organisations to produce the mean percent sales to each market and the percent identifying each of the preferred markets. Both indicators are presented in Figure 11.

At the most obvious level, one concludes that destination markets lean strongly toward local consumption, as the bulk of product sold (72.4) by organisations never leaves the district in which it is produced. The rest is split between the Kigali market and the organisation’s own or other provinces. That pattern differs from what organisations say are their preferred markets over the next three years. They are clearly looking to expand beyond the local district markets, particularly to Kigali (28.3%) where they know that prices are higher. They also show greater interest in selling their product across a range of international markets, expanding from a negligible level currently (2.1%) to and overall 12.1% in the future. Most of this international market growth is envisioned to neighbouring African countries, notably DRC, Burundi, and Uganda, where prices can also be more competitive than in their home districts. The high concentrations of producer associations in border areas that supply the urban Goma and Bukavu markets are similarly indicative of this opportunity for Rwanda’s producers.

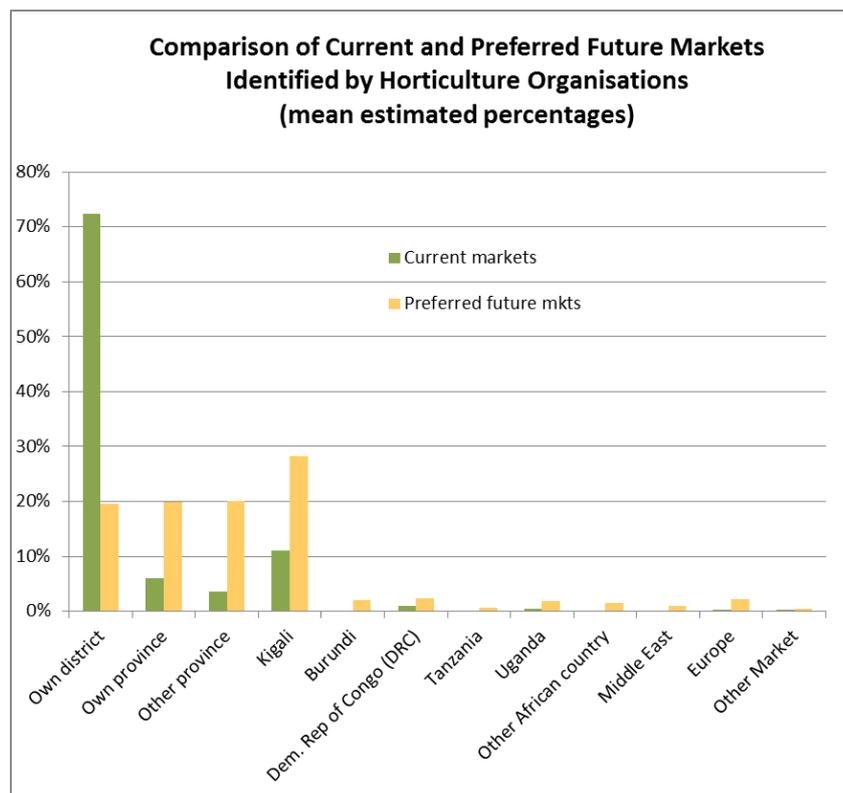


FIGURE 11

Only three organisations report a significant share of their product going to the higher end European and Middle Eastern markets. That organisations so rarely envision moving to these markets is likely a reflection of how little they know about them, other than a general awareness of the more exigent requirements and the challenges of meeting those requirements. In the following section we look more closely at the market requirement for current sales and perceived requirements for sales in preferred future markets.

3.3.3 Current and Future Market Requirements

Because most organisations sell principally to buyers on local (district) markets, product requirements are relatively relaxed. So long as growers can meet product size and colour expectations, as well as selling in adequate volume, their buyers will be generally satisfied (Figure 12). The volume requirement may exclude many of the smaller and disadvantaged organisations (e.g., women’s groups) that do not have access to larger tracts of land. Larger volumes are also generally associated with more distant markets, such as the Kigali and other urban destinations where prices are invariably higher.

Some of the more exigent standards that characterise higher-end export markets are rarely identified by Rwanda’s producer organisations. These include public standards such as food safety and phytosanitary certification as well as private standards including packaging & labelling and industry certifications such as Fair Trade. These are among the product standards that the Kenyan and South African producers regularly face in a more mature horticultural sector.

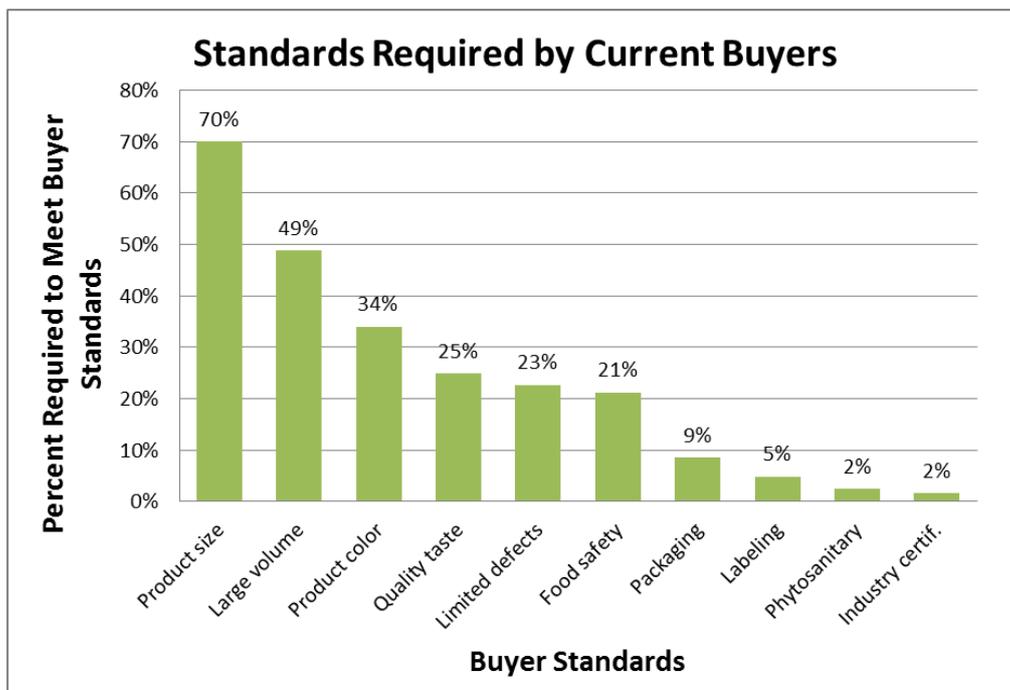


FIGURE 12

But these more stringent market requirements are not exclusively tied to export markets. They are also standards that are adopted by many of the larger urban market buyers. Nakumatt supermarkets is a good example as this is a Kenyan chain that is doing business throughout East Africa and has now opened a store in Kigali. And other, competing regional chains are surely coming: Uchumi and Shoprite also support aggressive growth strategies in the region and it may not be long before they, too, arrive in Rwanda.

As Rwanda begins to expand into these more mature markets in the coming years, particularly in Kigali and some of the secondary urban areas, there will be growing pressure to conform to public and private industry standards. The challenge for Rwanda’s growers and processors will be in developing the capacity to meet those standards and capture greater market share.

Currently the Nakumatt store in Kigali supplies very little product from Rwanda. South African and Kenyan labels are far more common. An important goal for Rwanda’s horticulture producers, particularly for associations that can sustain high volumes of product, will be to tap into these local high-end markets and begin to supply greater amounts of high quality products to urban markets.

In the longer run, Rwanda may also envision taking on contracts with the regional supermarket chains that will enable access to urban markets in Uganda, Kenya and other countries in the region. But that will require building the capacity to meet increasingly stringent market requirements. There is a small cadre of organisations that is gaining an appreciation for what will be required. This way of thinking emerges in Figure 13, which reports on the challenges that organisations expect will be their most important in accessing preferred markets in the future. Packaging (18.4), market information (26.8%), and industry certification (11.4%), for example, are challenges that show up in sufficiently high frequency to suggest that producer groups have a growing awareness of what will be required, even if they are not able to conform to these standards now. That is an encouraging sign.

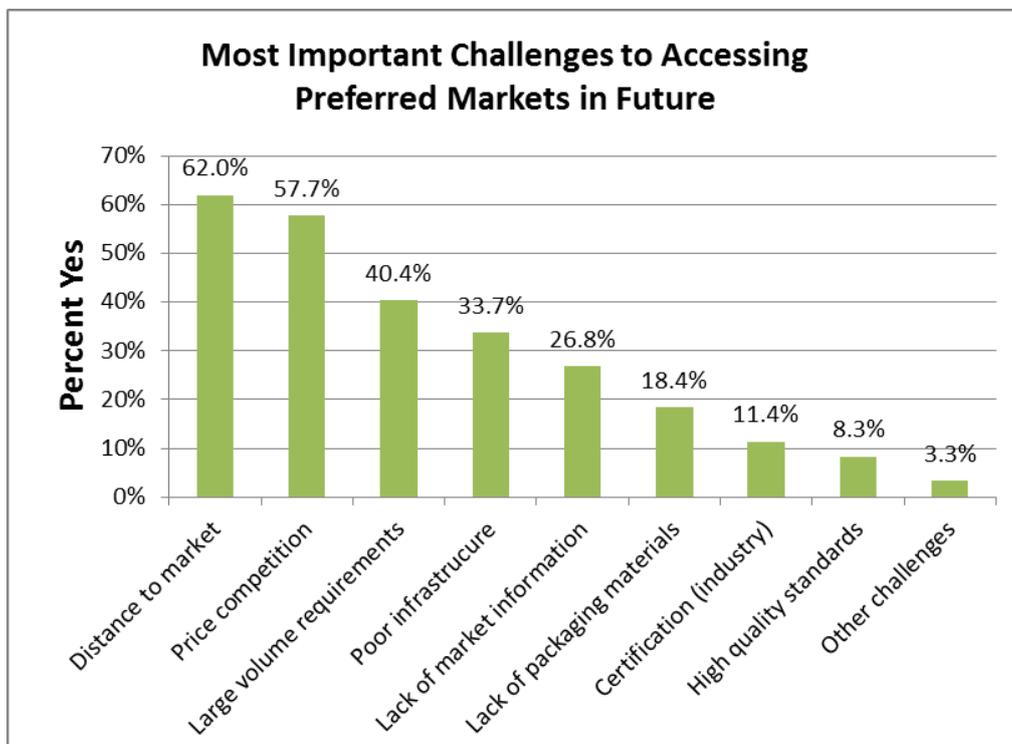


FIGURE 13

But for now the most important challenges to preferred markets are more fundamental. They include: how to deal with long distances and poor infrastructure, meeting market price points and doing so in sufficient volume as to attract wholesalers and retailers that do business in these markets. Some of these changes lie beyond their immediate control. Geographical proximity and paved roads benefit some, but not others. It is noteworthy, however, that recognition of these constraints appears to have led to the growth of associations in areas where transportation networks are more highly developed. Virtually all of the maps in annex to this baseline report demonstrate that organisations are not randomly distributed across the

countryside. They tend to be clustered along the national routes, most notably those leading to and from Kigali.

Certification. Although there seems to be some awareness of the importance of private standards and how certifications such as organic, Fair Trade and GlobalGAP can lead to higher prices, it is clear that organisations are still a long way from embracing the concept. Currently only 17 organisations (1.47%) hold certification of any kind, and over half of these are local, Rwanda Bureau of Standards (RBS) certifications (Table 6). More promising is that another 56 organisations are now in the process of becoming certified, and 20 of these are higher-end international certifications. This finding demonstrates that there is rapidly growing interest in accessing international markets.

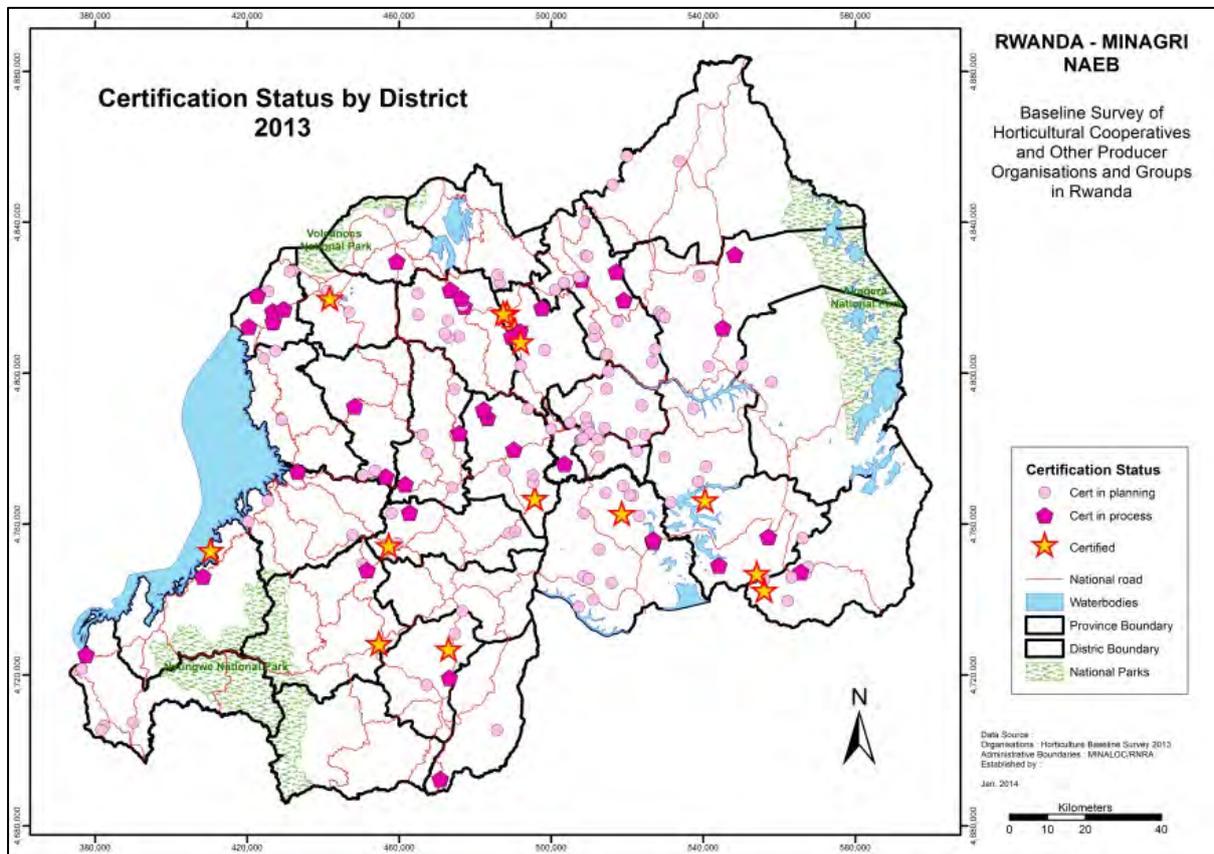
Stated certification plans for future years is similarly indicative of the growing interest in accessing higher end markets. Over 20% of Rwanda’s organisations are planning to pursue one or more certifications in the next three years. While half of these are local, RBS certification, the other half is planning on seeking organic, Fair Trade or GlobalGAP certification. This will be an important figure to track in the coming years to see whether this growing level of interest will actually materialise, and if so, whether it can be sustained.

TABLE 6

	Organisations Certified or in the Process of Certification by Type of Certification		
	Currently Certified	Certification in Process	Certification Planned for next 3 years
	(N)	(N)	(N)
RBS certification	10	36	116
Organic certification	2	11	71
Fair Trade certification	3	4	26
GlobalGAP certification	1	3	20
HACCP certification	1	2	2
UTZ certification	0	0	0
Total Certified	17	56	235
Total N	1,155	1,155	1,155
% Certified, in process or planning	1.47%	4.85%	20.35%

Who are these organisations that are oriented toward certification, i.e., those who have already been certified or are working toward or planning for certification? Where are they located? What crops are they producing? A quick review of the survey data shows that organisations that are certification-oriented tend to have larger membership, more assets, cultivate more area and have greater sales. In other words, being big, established and commercially oriented translated into considerably greater interest in certification and the benefits that it can bring. Compared across regions, there does not appear to be a clear pattern, as organisations from all regions seem to be expressing interest in the range of 10-20%. It was surmised that Kigali

province might be more advanced than others in this regard but that is not the case (see Map 2). Kigali is actually lower than all other regions in their numbers certified or in the process of certification, yet organisations in Kigali are more advanced, at 20%, than any other region in terms of their plans for certification over the next three years.



MAP 2

Noteworthy is that fruit and vegetable growers do not differ in their interest in producing certified crops. This is true for actual certification, those in the process and those just in the planning stages. They are remarkably alike in that regard. Not surprisingly, the one group that differs substantially from the others is the horticulture processors, who are dramatically higher than fruit and vegetable growers in all categories of certification. Indeed of the 14 processors in the survey, only one is not at least planning to become certified in the next few years. The predominant certifications of interest to the processors are RBS and organic certification. The high level of RBS certification is anticipated as all of the country's processors are expected to be RBS certified as a public health (food safety) measure.

3.4 Accessing Agricultural Inputs, Services & Information

Section Contents

3.4.1	Intensification through Improved Inputs	32
3.4.2	Access to Inputs & Services.....	33
3.4.3	Sources of Information for Improved Horticulture Practices & Management.....	37

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 3	Crop Production, Inputs Use and Sales	Crop	3,171
Section 8	Buildings & Equipment	Organisation	1,155
Section 12	Access & Sources of Information	Information type	25,410

Section Tables, Figures and Maps

Table 7.	Intensification Investments by Selected Inputs/Practices and Crop Category	32
Table 8.	Organisations Reporting Poor Access to Selected Inputs/Services by Main source of Revenue	34
Figure 14.	Organisations Reporting Poor Access to Intensification Inputs and Services by Main Source of Revenue	35
Figure 15.	Primary Constraints to Access to Inputs and Services	36
Figure 16.	Sources of Information Received by Organisation by Type of Information.....	37



3.4.1 Intensification through Improved Inputs

Intensification through the adoption of improved inputs and practices is one of the guiding themes of Rwanda's agricultural strategy. It is envisioned that through land consolidation and specialisation the country's producer organisations will achieve greater economies of scale, making the cost of inputs more affordable and their adoption more practical. This subsection reviews the extent to which this vision has taken root. Table 7 presents data on the use of three sets of improved inputs: seed, fertilisers, pesticides/fungicides, plus the adoption of irrigation technologies. These inputs and practices are compared across organisations, classified by the crop categories they are used on—fruits, vegetables and other horticulture.

TABLE 7

	Intensification Investments by Selected Inputs/Practices and by Crop Category			
	Crop Category			
	Fruits (%)	Vegetables (%)	Other hort* (%)	Total (%)
Seed				
None	1.4%	1.2%	1.7%	1.3%
Own/traditional	32.1%	9.0%	34.7%	14.6%
Improved or Both	66.5%	89.8%	63.6%	84.1%
Total	100.0%	100.0%	100.0%	100.0%
Fertiliser				
None	11.2%	3.9%	3.3%	5.3%
Trad/Organic	57.1%	34.3%	52.1%	39.6%
Commercial or Both	31.8%	61.8%	44.6%	55.1%
Total	100.0%	100.0%	100.0%	100.0%
Pesticide/Fungicide				
None	42.0%	15.1%	28.9%	21.1%
Organic/IPM	12.6%	10.0%	3.3%	10.3%
Commercial or Both	45.4%	74.9%	67.8%	68.6%
Total	100.0%	100.0%	100.0%	100.0%
Irrigation				
None	63.8%	10.4%	16.5%	21.4%
Water by hand	28.9%	78.5%	73.6%	68.3%
Sprinkler, drip or other	7.2%	11.1%	9.9%	10.3%
Total	100.0%	100.0%	100.0%	100.0%
Inputs investment Index				
Mean scale score	4.33	6.07	5.36	5.69
<i>N</i>	636	2391	121	3148

*flowers, nuts, herbs & spices

Improved seed is now used by the vast majority (84.1%) of crops grown by organisations in Rwanda. Only a small fraction continues to use traditional seed (or no seed at all in the case of tree crops and certain vegetables). Breaking out improved seed adoption by crop category is equally revealing. The highest use of all is by vegetable growers at 89.8%, with a markedly lower average rate of around 65% in the fruit and other horticulture categories.

Commercially available fertilisers and pesticides & fungicides are also commonly used by horticulture organisations in Rwanda. Nearly all producer groups apply fertilisers to their fields, using either traditional, organic fertilisers (typically manure and compost) approximately 40% of the time or, commercial or a combination of commercial and organic another 55.1% of the time. Vegetables are considerably more likely to receive applications of commercial fertilisers than are fruits, and vice versa for the use of organic fertilisers. Practices in support of organic certification may be a factor in the lower use of chemical inputs among fruit growers in Rwanda.

Mechanical irrigation using sprinklers or drip technologies is limited to just 10.3% of organisations and that overall proportion does not vary significantly in the production of fruits, vegetables and other crops. Among fruits, drip and sprinkler irrigation tend to be used in the production of tree fruits such as mango, orange, lemon, avocado and cape gooseberry. The high volume crops like pineapple, passion fruit and tamarillo are not mechanically irrigated. Among vegetable crops, tomato, sweet pepper and leek are mechanically irrigated more often than others.

By contrast, watering by hand (buckets) is very common among vegetable growers (78.5%) but much less so in fruit production (28.9%). This is because most vegetable crops are seasonal and require significant water for proper growth. They also tend to be grown in concentrated areas in valleys, making hand irrigation a relatively easy option. Fruit crops are often perennials and as such are heartier and deep rooted, thus able to do well with minimal irrigation. Fruit crops are also grown mostly on the hillsides, making hand irrigation a more labour intensive task in those often more distant and dispersed locations.

Overall, one concludes from these figures that the adoption of improved inputs and technologies has been relatively successful in the horticulture sector, with the majority of growers, particularly vegetable and specialty crop producers, following the recommendations of extension and other experts for an increasingly modern and professionalised sector.

3.4.2 Access to Inputs & Services

Success in horticulture, as in any agricultural sector, requires adequate access to the right inputs, equipment and services. In the case of producer groups, access to seed, fertilisers, tools irrigation equipment, market information and other inputs and services is critical. For processing organisations, packaging, processing equipment and other items take on greater significance.

To determine the extent to which organisations have such access they were asked three questions with regard to 23 different types of inputs, equipment and services. The first question asked *whether* a given item was important to the success of their organisations. The second asked about the *level* of access they currently had (on a scale from 1 to 5) for each item identified as important to success. The third question asked them to identify the major constraints they faced in improving their access to the input/service item.

The proportion of organisations reporting various inputs and services to be important to their success as a business varies greatly. Because nearly all of the organisations in the data base are producer groups, it is not surprising that 96% say that seed is an important input (Table 8). The

same is true for fertilisers, pesticides and small production equipment. Other items, by contrast, are identified as important to success far less frequently; cold storage equipment (32%) and packing materials & equipment (28%) are good examples. Those items that rise to the top in terms of overall importance tend to be the most basic services. In addition to the production inputs mentioned above, organisations also identify irrigation equipment, sufficient water, paved roads, market information and credit as critical needs.

TABLE 8

Organisations Reporting Poor Access to Selected Inputs and Services by Main Source of Revenue					
Input/Service	Orgs Reporting Input/Service Import to Succ		Main Source of Revenue		
			Fruit sales	Veg sales	Other hort crop sales
	N	Pct	Poor Access	Poor Access	Poor Access
Seed	1112	96%	26.7%	24.3%	18.2%
Organic fertilisers	1055	91%	32.0%	25.3%	15.0%
Commercial fertilisers	904	78%	52.8%	39.1%	18.2%
Pesticides	986	85%	55.8%	37.2%	25.0%
Small production equipment	1033	89%	27.9%	23.1%	9.5%
Large production equipment	346	30%	85.0%	77.6%	62.5%
Irrigation equipment	854	74%	67.9%	52.4%	40.0%
Electricity	613	53%	72.8%	60.3%	44.4%
Sufficient water	921	80%	47.1%	31.3%	11.8%
Clean water	777	67%	52.7%	43.2%	25.0%
Green house materials & equip	345	30%	70.9%	72.2%	62.5%
Certification services	283	25%	86.0%	88.8%	87.5%
Horticulture processing equip	302	26%	86.2%	82.6%	100.0%
Dry storage facilities	372	32%	79.9%	80.4%	100.0%
Cold storage equip/facilities	373	32%	85.7%	91.9%	100.0%
Packaging materials and equip	328	28%	86.3%	83.1%	84.6%
Internet/computers & supp serv	368	32%	88.3%	84.5%	33.3%
Transportation	713	62%	80.2%	74.9%	38.9%
Paved/accessible roads	934	81%	40.4%	32.4%	5.3%
Mkt info for hort crops/products	849	74%	64.4%	60.8%	55.0%
Exports promotion services	366	32%	88.7%	85.5%	85.7%
Exports certification services	297	26%	87.4%	83.4%	83.3%
Credit/financing	851	74%	63.2%	62.7%	53.3%

Table 8 also breaks out the percentage of organisations indicating that their access to these inputs and services is “low” or “very low” across organisations grouped according to their main sources of revenue. As described in the subsection below, processor organisations are treated separately in this analysis. For the fundamental improved agronomic inputs required for higher productivity, one observes that fruit producers have a greater access problem than do producers of vegetables or other horticulture products. This disparity is highlighted in Figure 14 where, for example, 52.8% of fruit producers struggle to obtain commercial fertilisers compared to 39.1% of vegetable producers and 18.2 percent of groups producing other horticulture crops (flowers, nuts, herbs and spices, etc.). The same pattern holds across all inputs required for the intensification of horticulture production.

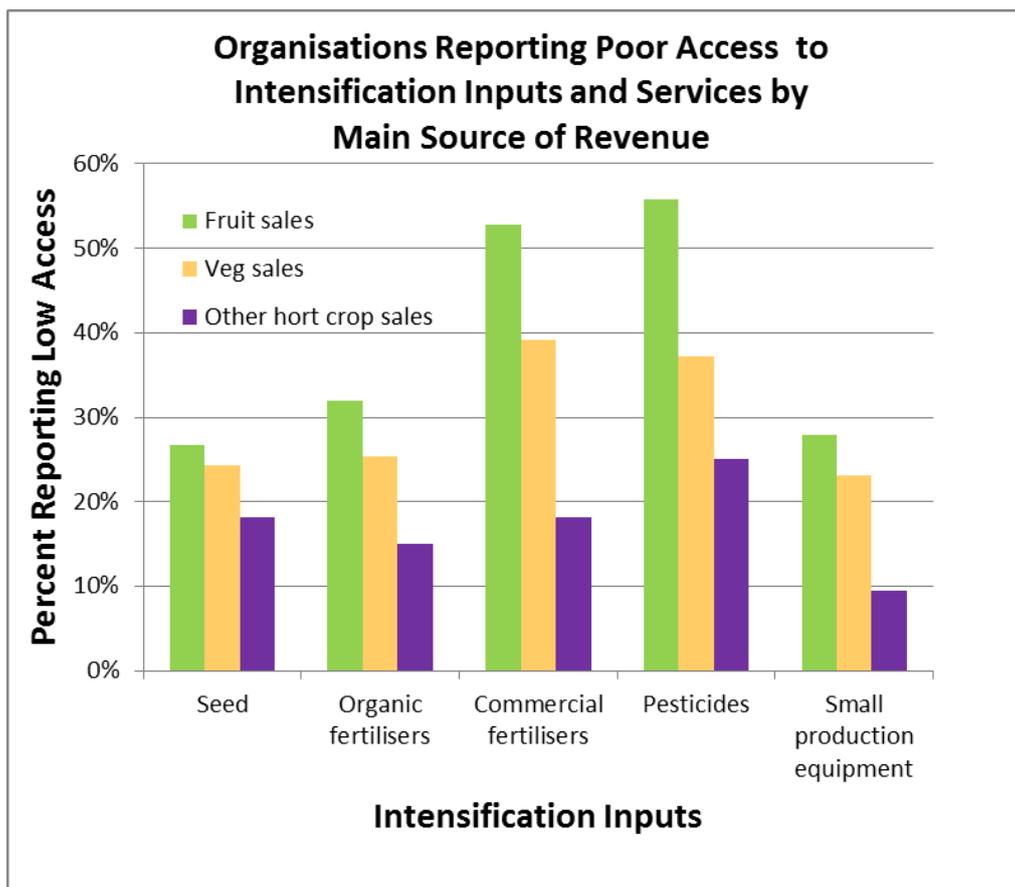


FIGURE 14

Why fruit producers have more limited access than do vegetable and other horticulture crop producers may in part be a function of their smaller membership and overall sales. But more likely it is tied to other factors, some of which are reported below, that differentiate fruit and vegetable grower organisations. Figure 15 presents the responses organisations provided to the question on the primary constraints they face in accessing inputs and services. The high costs of inputs and services are the major constraint identified, however this appears to be equally problematic for all types of producers, including those in specialty crops. The two factors that most successfully differentiate the groups are “lack of local availability” and “low public investment,” both of which are noticeably higher for fruit growers than for vegetable or other (specialty) crop producers. Interpreting what this means can certainly be debated, but it does not appear to be a function of geography, as the same set of constraints broken out by

province does not suggest that fruit growing regions, such as the North Province, have significantly more or less constrained access to inputs and services than do other regions.

A more plausible interpretation is that fruit production in Rwanda has simply not received the level of promotional attention that vegetable production has. In many ways fruit production is more diversified and dispersed than vegetable production and nearly all fruits are grown across the hillsides, as opposed to vegetables which are nearly always grown in the valleys (as will be seen in a later section of this report). Undoubtedly there are also positive externalities, or spill-over benefits, that accrue to vegetable production when grown in proximity to (and often alternating with) maize and other crops promoted through Rwanda’s crop consolidation and specialisation programs. The flow of seed, fertilisers and other agricultural inputs into the highly promoted grains and other field crops comes with inputs distribution networks and related extension services that can be easily extended in support of vegetable production. More developed market channels in these areas may also be a boon to vegetable producer groups.

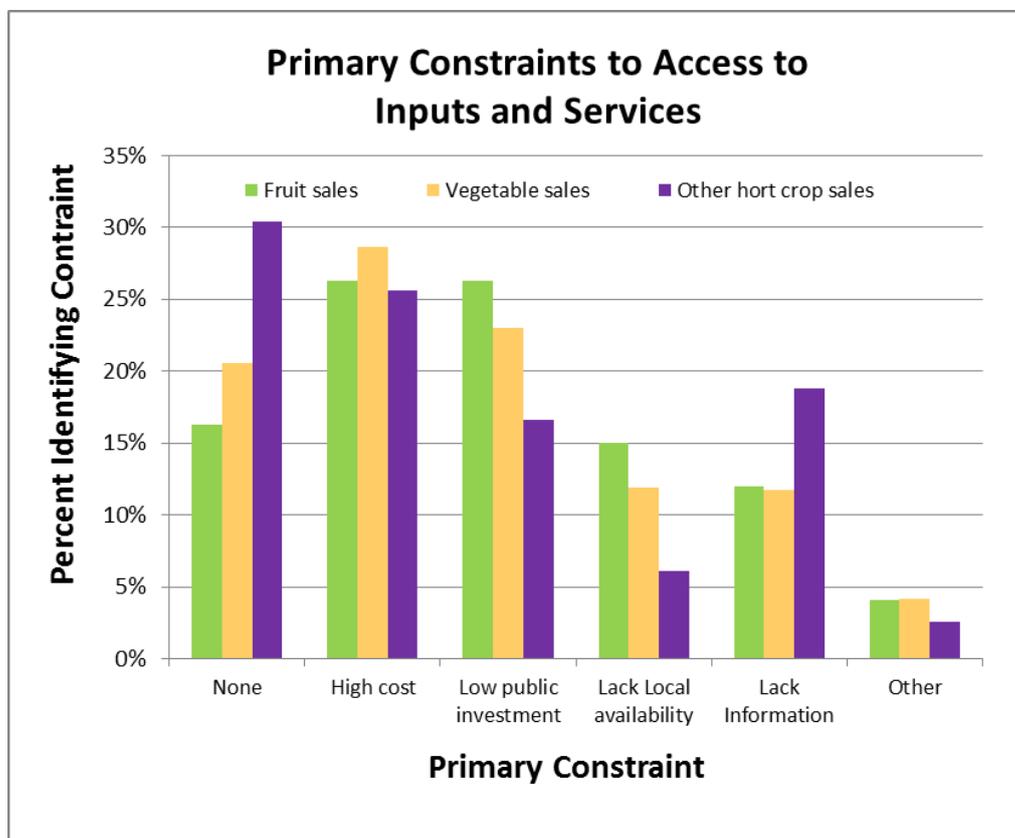


FIGURE 15

Processing organisations. Because of the very small number of horticulture processing organisations indicating poor access to inputs and services, this group is not included in Table 14. Instead, in those critical areas where numbers are sufficient and percentages meaningful the findings are described individually here. There are two such areas where there appears to be consensus expressed by processing groups in the need for improved access. The first is in the area of export promotion services and the second is in certification services. Both areas are at the high end of the spectrum of services and are indicative of the markets in which these processor organisations are interested in engaging.

3.4.3 Sources of Information for Improved Horticulture Practices & Management

Good technical, marketing and managerial information is essential to success in the horticulture sector. There are four particular types of information most often sought by Rwanda’s horticulture organisations, these include: improved production practices, market information (prices and destinations), inputs prices and management/business practices.

From what sources and through what channels organisations obtain such information is reported in Figure 16. By far the most important source of information of all types is through direct person-to-person contact. Nearly 80% of organisations identified other members, friends/family, other producers, product sales agents, extension agents, and projects/NGOs as the primary or secondary sources of information across a wide range of areas. Among the highest of all coming through these sources is information on post-harvest practices as well as improved business and management practices.

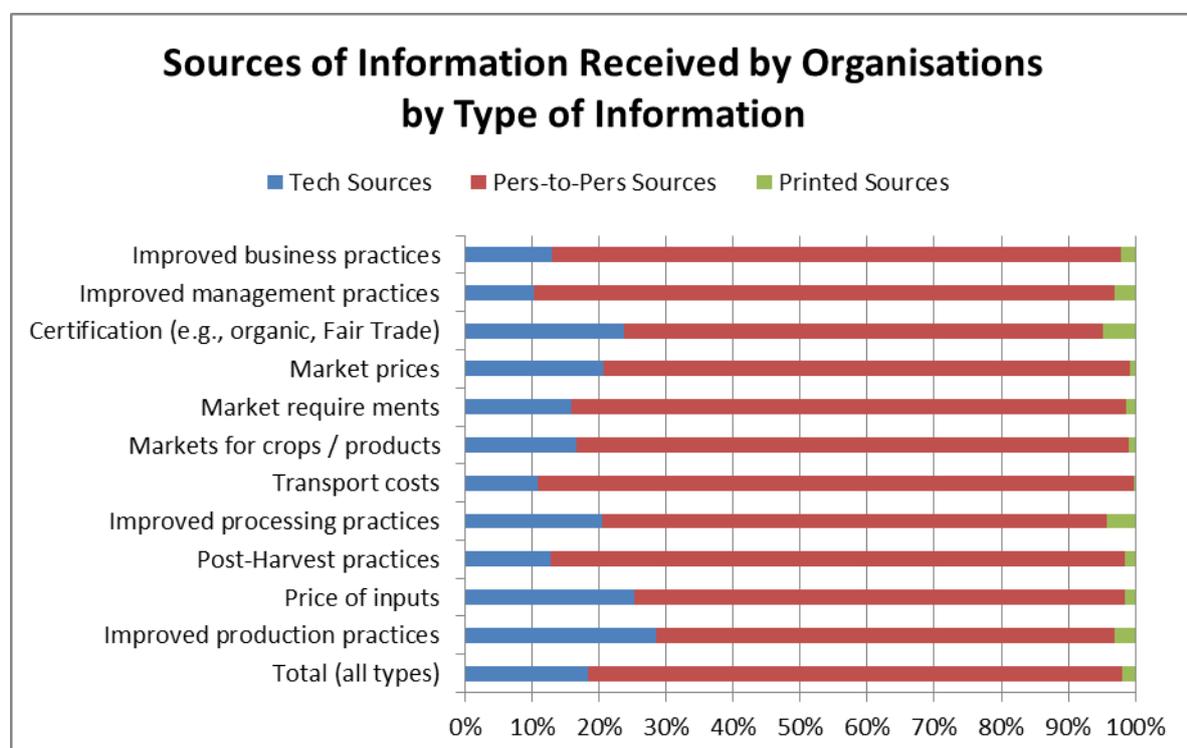


FIGURE 16

Technology sources such as radios, mobile phones/SMS, televisions and the internet are the next most important information source. It is important to note that telephones are recorded here only when they are the *source* of the informational content, not the mechanism through which it is delivered. In other words, telephones are used for much person-to-person interaction but they are not recorded as the source of that information. These technological sources appear to be of relatively greater importance for information on improved production practices, inputs prices, market prices and on certification systems. Looking more closely at the specific technologies most often used by organisations one observes that radio and then mobile phone/SMS are the main sources of information. Television and internet access are still extremely limited in Rwanda.

The third set of information sources identified by the survey is written materials, such as extension publications, commercial publications and newspapers. These sources only account for 2.0% of all information used by organisations and much of that is concentrated in just a few areas, including production and processing practices and certification services. That printed materials receive such a minor following is rather surprising given the vast attention given to these sources by support agencies, projects and services. This result, coupled with the findings on how technologies and person-to-person communications are use, should serve as an important lesson for all engaged in promoting best practices and products to potential users in the horticulture sector.

3.5 Spatial Location and Competing Land Use

Section Contents

3.5.1	Valley and Hillside Location of Horticulture Crops.....	40
3.5.2	Distance from Paved Road.....	42
3.5.3	Competing for Land.....	44

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 6	Land by Use and Ownership Category	Land Category	17,325

Section Tables, Figures and Maps

Figure 17.	Location of Land (Ha) on Hillside by Selected Land Characteristics.....	40
Figure 18.	Production Area (Ha) by Location on Hillside and Province.....	41
Map 3.	Organisations by Distance to Paved National Road.....	42
Table 9.	Selected Characteristics of Horticulture Organisations by Distance from Paved Road.....	43
Figure 19.	Major Competing Uses of Land.....	44
Figure 20.	Horticulture Competition for Land by Regional Specialisation Program Crops.....	45



3.5.1 Valley and Hillside Location of Horticulture Crops

Some organisations operate land in the valleys and others operate land on the hillsides. These are important differences in terms of crop production, geography, land ownership, use of inputs and other factors. Figure 17 breaks out the different types of land use by organisations according to where on the hillside each is located. Total area in production by organisations in the past 12 months amounts to 7,135 hectares and topographically this land area shows a relatively balanced distribution, with roughly equal proportions in the valleys and on the lower and upper hillsides.

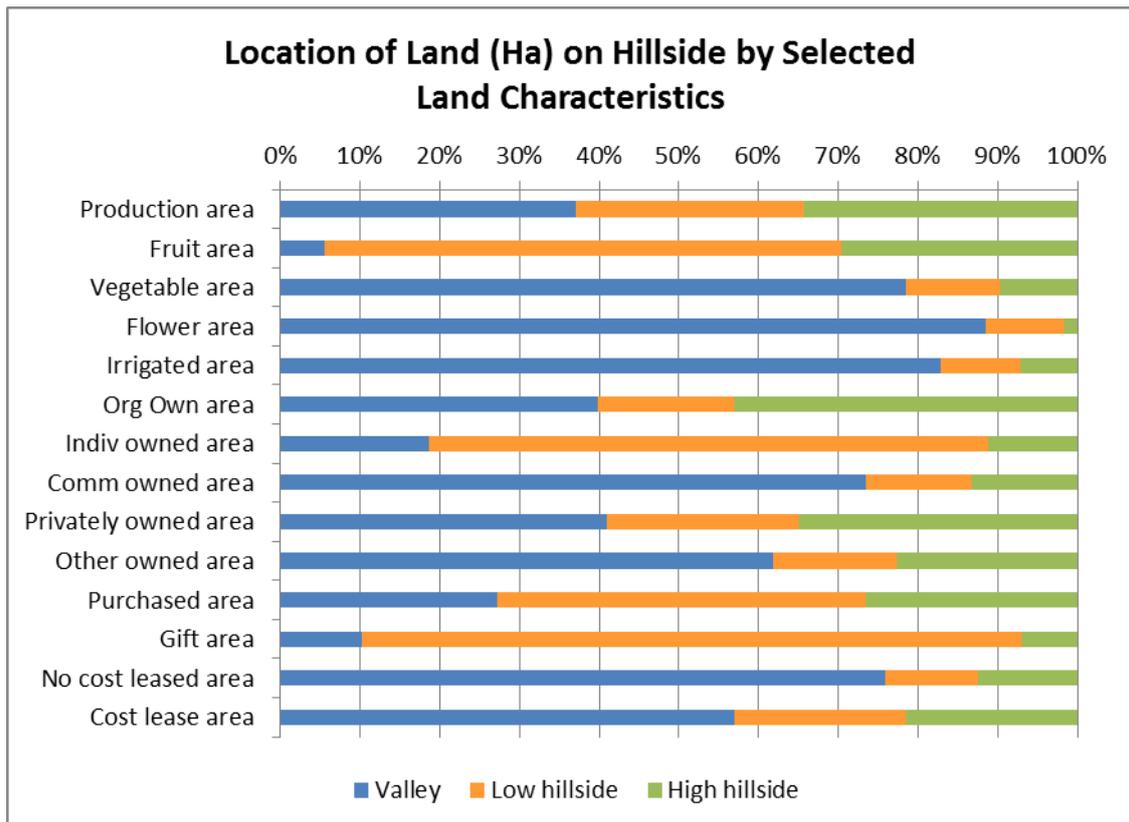


FIGURE 17

Comparing the locations of fruit, vegetables and flowers yields a striking contrast. Fruit is grown almost exclusively (94.4%) on the hillsides and rarely in the lowland areas. Most fruit is perennial, (e.g., passion fruit, avocado, mango), and as such it is not selected by organisations for production in the common area valleys that are most often reserved for annual crops such as maize, bean and other crops promoted through land consolidation policies. Horticulture organisations follow this same directive in producing vegetables. And this can be aptly seen in the data where vegetable crops are grown 78.5% of the time in the lowlands. Flowers are even more likely than vegetables to be located in valleys, at 88.5%.

Another part of the reason for locating vegetables and flowers in the valley bottoms is their greater need for irrigation, as seasonal crops. Irrigation is more manageable and cost effective in the flatter lowlands, often previously wetlands, than on the hillsides.

Land ownership is also affected by topography. Land owned by organisation tends to be located on the hillsides (61.2%). This is especially true (81.4%) when the land operated by the organisation is located on the individual members' farms. It is not uncommon for organisations to form on the concept where each producer designates a fixed portion of his/her own holdings (e.g., 5 ares) to the organisation. Members operate such parcels in consort with the organisation and following the crop choice, inputs regime and other directives of the organisation. Land purchased by organisations tends to be similarly located on the hillsides as this is mainly where land comes up for sale. Communally owned lands tend to be situated in the lowland areas and are less frequently put up for sale. By contrast, when land is collectively leased by an organisation it is usually (about 70% of the time) located in the valleys. These are typically communally owned lands that are made available to cooperatives and associations through long-term lease arrangements.

It is instructive to examine how topography and horticulture production intersect with geography, notably across Rwanda's five provinces, as that will help to shed light on a range of findings presented in this report. One observation that stands out in Figure 18 is that there are sweeping differences from one region to the next. Kigali province represents an extreme case where nearly all land (90.7%) operated by organisations is located in lowland areas. Earlier it was discovered that a roughly equal proportion of horticulture production in Kigali was in vegetables such as tomatoes, French beans and cabbage. Kigali produces almost no fruits.

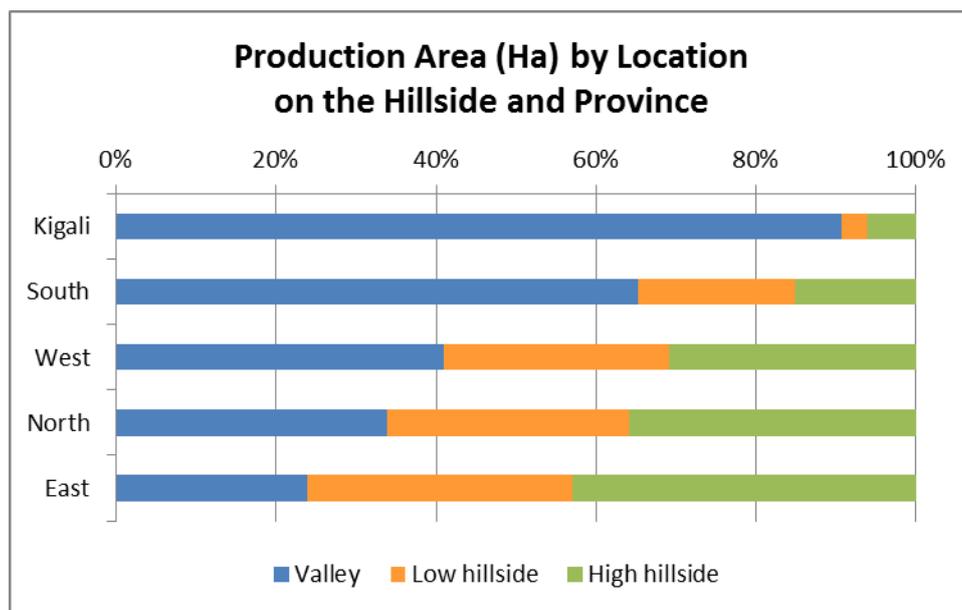


FIGURE 18

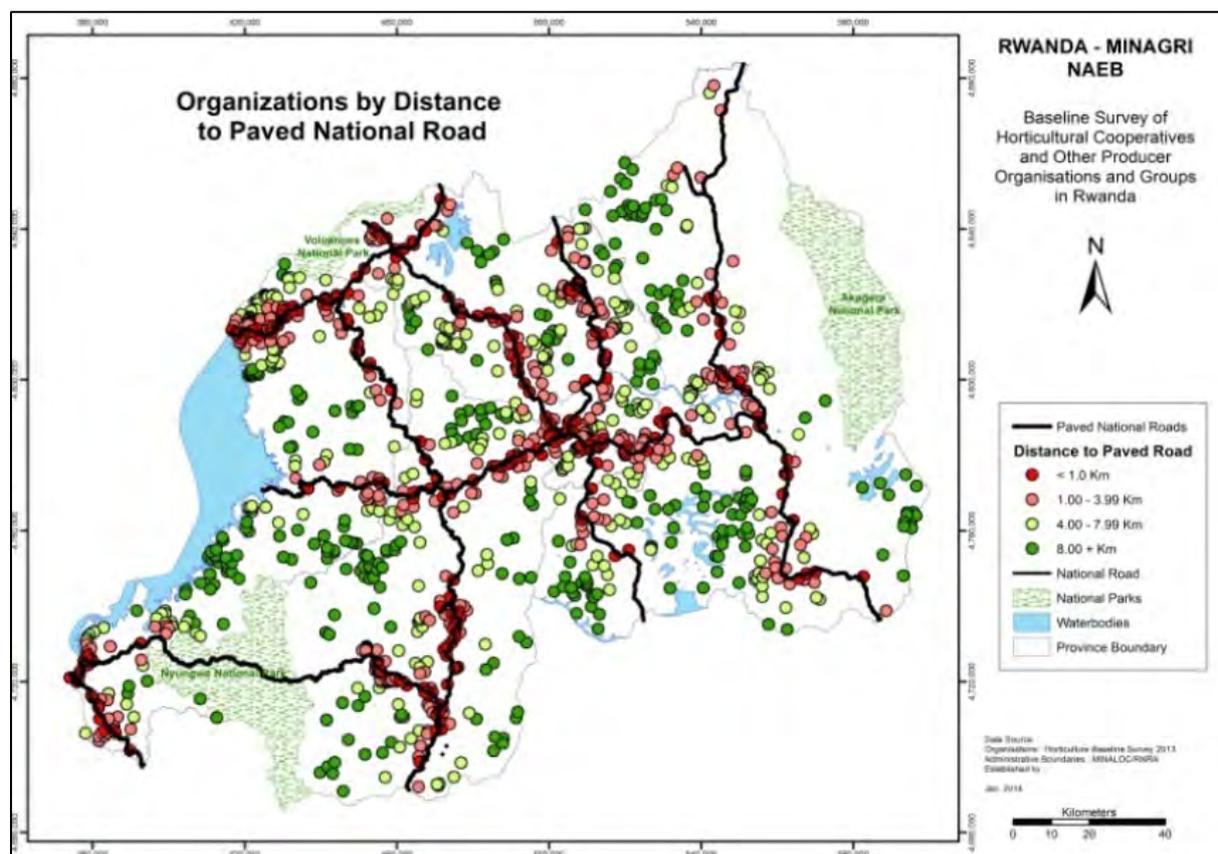
The South province is similar to Kigali but less extreme at 65.4% valley production, and its focus on vegetable production is also exceptionally high, with over a third of Rwanda's total vegetable production coming from the region. And the parallel continues for the other provinces with increasing proportions of land operated by organisations being situated in upland areas. In the East province, 76.1% of horticulture is on the hillsides and the majority of that is on the upper slopes. Not surprisingly, organisations in the eastern province produce a higher volume of fruits than producers in any other region.

This distinct pattern of findings begs the question of whether the cropping and production patterns of organisations in Rwanda are dictated by market demand or by agroecology and topography—simply by where land is accessible to those producer groups (i.e., in the valley or the hillsides) and what crops happen to grow well in those areas or require agronomic practices (e.g., irrigation) that are suitable to those areas. The answer is that it is probably a bit of both and that it is in a state of flux as urban markets and cross-border trade/competition continue to expand.

One other important factor to consider from an agroecological perspective is the significance of fruit crops as perennials, which, like coffee, tea, banana and other tree crops, are vital to the country’s battle against soil erosion. While it is not clear whether fruit and other highland perennials are deliberately planted by producers or producer groups with the aim of reducing soil loss, it is without doubt a highly effective contribution to that ongoing effort and worthy of further study and potential promotion.

3.5.2 Distance from Paved Road

Many organisations identified poor roads and transportation as a steep challenge to their success. Using ArcGIS the team was able to complete a spatial analysis of organisations to identify their distances from the nearest national road and the nearest paved road. Analysis of these effects reinforced the views expressed by many that good roads can make a difference. Proximity to paved roads is found to be an especially important determinant. Map 3 shows the location of all 1,155 organisations relative to the country’s paved road system. Organisations are coloured according to their proximity, with dark red being the closest and dark green being the farthest from a paved road.



MAP 3

The map underscores the fact that a large number of organisations have formed in areas close to paved roads, suggesting that roads are a factor in the establishment of horticulture organisations, or in their longer term success. It also shows that there are plenty of organisations that form in more distant areas. Important regional differences also emerge, showing that organisations in Kigali average 2.3 Km to a paved road compared to three times that distance (6.9 Km) on average for organisations in the less densely populated East province. While distances are farther in the East province, it is important to note that roads there are, in general, flatter and straighter than they are in other regions of the country.

TABLE 9

Selected Characteristics of Horticulture Organisations by Distance from Paved Road										
Selected Characteristics										
Distance from paved road (Km)	Membership N	Membership (mean)	Percent Female members (mean)	Area (Ha) under production (mean)	Area (Ha) under irrigation (mean)	FRW in loans over past 24 mos (mean)	KG per Ha land under production (mean)	FRW per day of labor (mean)	FRW per Ha (mean)	FRW per KG (mean)
< 1.00 Km	259	45.7	60.7%	4.73	1.85	6,009,486	12,558	1,902	3,470,659	347
1.00 - 3.99	297	50.3	58.5%	5.35	1.45	356,840	11,986	1,826	2,508,474	275
4.00 - 7.99	282	58.6	53.7%	7.42	1.32	319,371	6,934	1,826	1,793,194	271
8.00+	317	64.0	54.4%	9.03	1.52	462,464	6,283	984	891,616	183
Total	1155	55.1	56.7%	6.73	1.52	1,644,244	9,268	1,606	2,082,020	266

Table 9 compares organisations by their proximity to a paved road on a range of defining characteristics, such as size, area cultivated, sales, and productivity. First, organisational membership is conditioned by road proximity both in numbers and male-female composition. The more remote organisations tend to be both larger and with fewer female members. Those located closest to paved roads (< 1.0 Km) are smallest in size at 45.7 members and highest in proportion female at 60.7%. At the other extreme, organisations located 8.0 Km or more from a paved road are the largest in membership, averaging 64.0 members, and are among the lowest percent female at 54.4%. Road proximity is also linked to area cultivated, with those closest to roads being smaller (4.73 Ha) than the most remote organisations registering nearly twice the area under cultivation at 9.03 Ha. This may be a reflection of the larger organisations (in membership and hectares) being disproportionately located in the East province

Table 9 also draws attention to how proximity to paved roads is associated with measures of agricultural productivity and sales values. There is a very strong association across the board. Close road proximity is linked to the highest levels of Kg yield per hectare, proving to be twice as high inside 1.0 Km from the road (12,558 Kg/ha) compared to 6,283 Kg/Ha for those located 8.00+ km from the paved road. The same pattern holds for FRW per day of labour, at 1,902 FRW/day compared to 984 FRW/Day for the less proximate organisations. The productivity difference is even more pronounced when measured in terms of FRW per hectare, showing almost a four-fold advantage for organisations located closest to the paved road. An important part of the improved marginal value product (MVP) for land and labour is that crops grown closer to the paved road sell for much higher prices than do those produced in more distant locations. The average FRW/Kg price for crops grown near the paved road is 347 FRW compared to approximately half that value (183 FRW) for crops grown 8:00+ kilometres from

the paved road. This dramatic difference is likely a reflection of the greater access these organisations have to Kigali and other higher paying markets for horticulture product.

3.5.3 Competing for Land

The conversion of large tracts of valley lands for agricultural purposes is a process that has evolved for generations in Rwanda. Traditional uses such as pasture and protected wetlands have given way in many areas to increased crop production, particularly from a growing number of cooperatives and other farmer associations as a part of the country's overall agricultural development strategy. In addition to the phenomenal growth in horticulture organisations reported earlier in this report, there has been similar expansion of farmer groups in other promoted commodity subsectors such as maize, bean, wheat and rice.

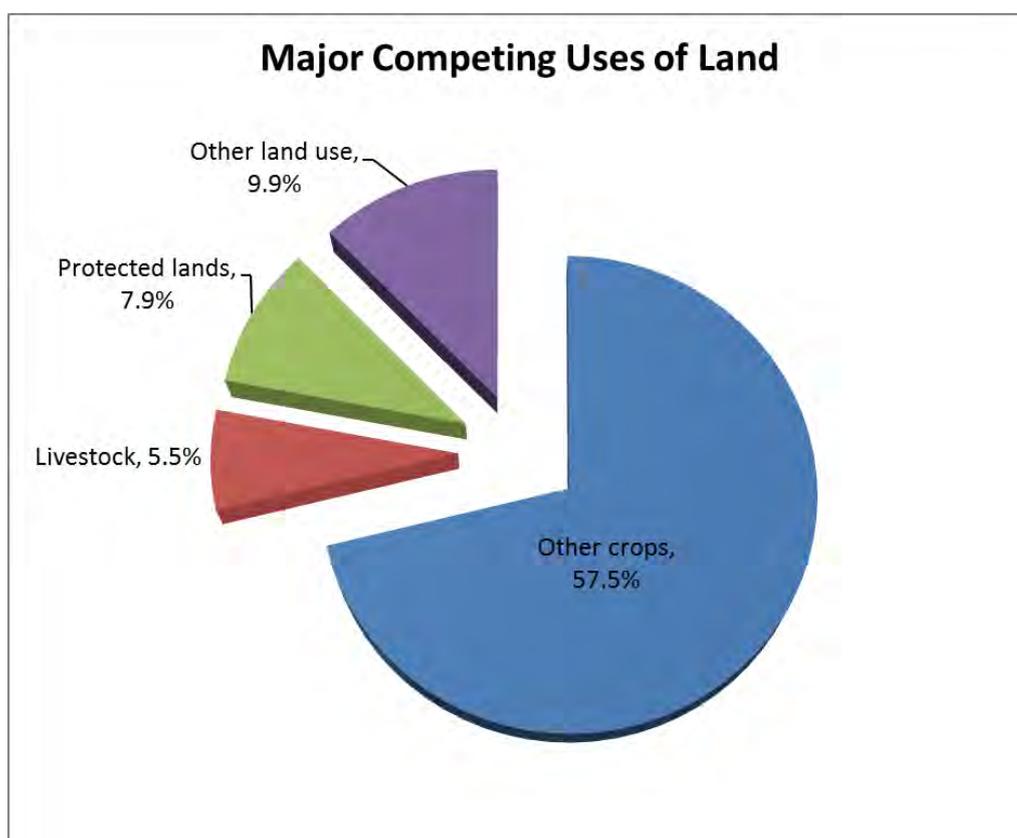


FIGURE 19

When asked about their own experiences in competing for land in their local areas, organisations provided insights into the challenges they face. Figure 19 suggests that some of the more traditional competing uses such as pasture for livestock and wetland protection are relatively minor by comparison the 57.5% who identify other crops as a main source of competition for land.

The national crop consolidation and specialisation programs are the source of much of the competition horticulture organisations face, as confirmed by 37.7% of the organisations surveyed. From among those identifying these programs as competing for land in their areas, maize stands out as the major competing crop at 35.4%, followed by bean growers (10.6%), potato (5.4%) and other promoted crops (Figure 20).

Organisations in the West province are more likely than in any other province to identify competition with other promoted crops, with maize, bean, potato and cassava all being identified at a high rate. Next is the South province that identifies rice, wheat and cassava as competing crops. Wheat is a significant competing crop in the North.

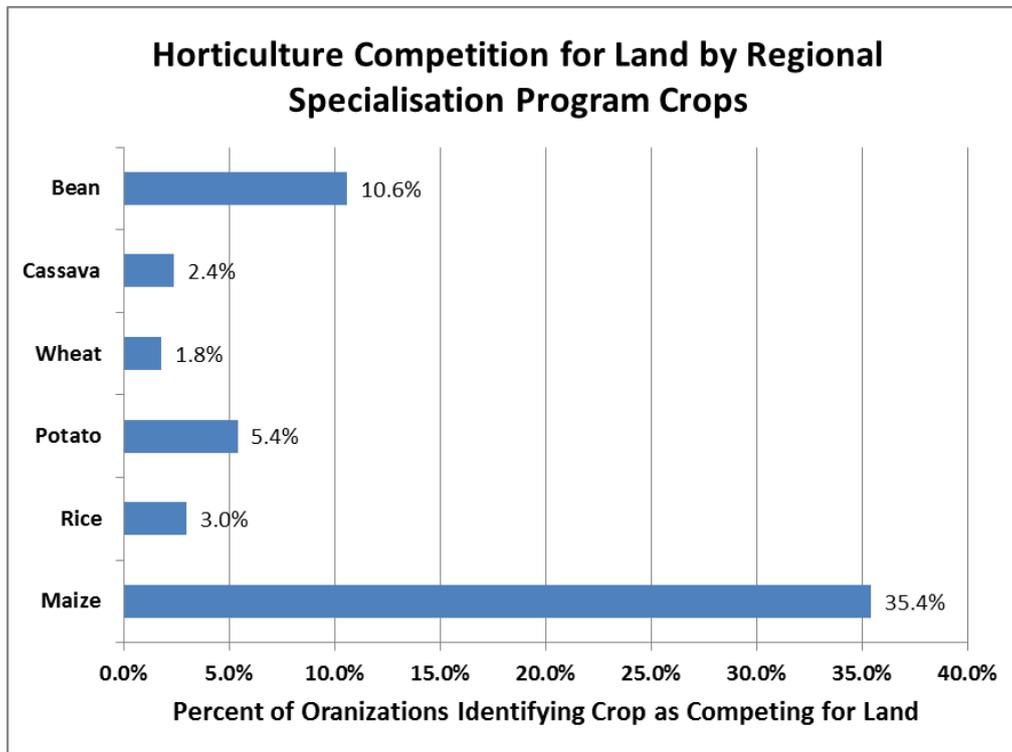


FIGURE 20

3.6 Age of Organisation, Gender Balance and Partnerships

Section Contents

3.6.1	Comparison of Older and Younger Organisations	47
3.6.2	Gender and Horticulture Organisations	48
3.6.3	Partners & Support for Horticulture Organisations.....	51

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Section 2	Organisational Characteristics	Organisation	1,155
Section 13	Partners and External Support	Support type	1,224

Section Tables, Figures and Maps

Table 10.	Comparison of Organisations by Year Established and Selected Characteristics.....	47
Table 11.	Selected Organisational Characteristics by Percent Female Membership Quartile	49
Figure 21.	MVP Land and Labour by Female Membership Quartile	50
Table 12.	Types of Support Received by Organisations by Type, Delivery Partner and Funding Partner	51



3.6.1 Comparison of Older and Younger Organisations

The rapid growth in the number of horticultural organisations in Rwanda was reported earlier in this report. This growth is important not only in terms of the numbers of new organisations that have been established (50% since 2010), but because younger organisations are different from more mature organisations in many ways that affect their performance, their needs and even in their basic geography.

TABLE 10

Organisational Characteristic	Year Organisation Established		
	1966 - 2009	2010 - 2013	Total
	(mean)	(mean)	(mean)
Age of organisation (years since estab.)	8.5	1.6	4.9
Total active Membership	67.9	41.8	54.1
Area under production (Ha)	10.27	3.37	6.67
Land owned (Ha)	1.25	0.23	0.72
Total sale of fruits (FRW)	1,417,474	508,230	943,397
Total sale of veg (FRW)	5,510,166	1,842,650	3,597,933
Total sale other hort crops (FRW)	193,284	37,907	112,271
Total crop sales (FRW)	7,120,924	2,388,788	4,653,600
Total processed product sales (FRW)	576,825	7,917	280,198
Total crops & products sales (FRW)	7,697,748	2,396,705	4,933,798
Input investment index	5.2	5.5	5.4
Percent sales in own district	71.8	72.9	72.4
Total SqM in Buildings	88.5	46.7	66.7
Area in greenhouse SqM	30.6	18.3	24.2
Nbr of loans in past 24 months	0.20	0.12	0.16
Strength of internal competencies	2.23	2.28	2.26
Strength of external competencies	1.60	1.66	1.64
Nbr types of outside support received	1.06	1.06	1.06
Organizational strength (scale)	4.24	4.17	4.20
Number of Organisations	548	597	1,145

Table 10 compares older and younger organisations across a range of indicators. This table reveals many of the differences that might be expected in comparing organisations that have been newly formed with those that are more established. Organisations that have been established since 2010 are only 1.6 years old on average, compared to 8.5 years for the “first generation” of organisations, some of which were established as early as the 1960s.

This additional 7 years, has enabled the older organisations to develop their membership, which stands at 67.9 on average, compared to 41.8 for younger groups. Area under production over the past 12 months (10.27 ha) is over three times that cultivated by newly formed organisations. Whether this is a function of their younger age or how times have changed is not clear. It may be that organisations become more established and influential over time and that

this enables them to acquire more land by purchase or by grant from local authorities. But it is also known that competition for land from many sources has escalated over the years and now means that organisations, like individual households, struggle to expand their land area. Looking more deeply into their circumstances, the data show that younger organisations are more interested than are older ones in expanding their land in operation and that they are facing moderately greater competition for land from other crops, such as maize and bean.

Greater crop sales reported by mature organisations mimics their advantage in area cultivated, with sales of 3-5 times as great as the newer producer groups. Not surprisingly, parallel analysis reflects the same pattern of findings in volumes (Kg) produced. The higher production and sales of more established groups holds for both fruits and vegetables. Where younger groups lag their older counterparts most dramatically is in the processing domain where capital investments are vital, clearly favouring the more established organisations (mainly private sector companies).

One area that did show unexpected findings is that the newly formed organisations register a higher score on the inputs investment scale at 5.5 compared to 5.2 for the older organisations. This finding is reinforced by the higher score on internal level of technical and managerial competencies registered by the newly formed organisations.

3.6.2 Gender and Horticulture Organisations

Women outnumber men by a significant margin in their membership in horticultural organisations, 56.5% to 44.5%, reaffirming their role in the success of these organisations. Most horticulture groups in Rwanda have mixed membership, with only 1.4% being all male and 5.6 being all female. To better understand the effect of gender on Rwanda's horticultural sector, organisations have been broken out into four equally sized groups (or quartiles) based on percent female membership, for comparison across a series of key defining characteristics as shown in Table 11.¹

Looking first at overall membership size, it is evident that the larger organisations are those that have a good balance of male-to-female membership as both middle quartiles measure well above the average of 54.7 members, while those at the extremes, i.e., mostly men or mostly women, are below the average size. This pattern of organisation size does not carry over into the land area organisations have under production, but there is a very clear gender effect on this all-important land access variable. Predominantly male organisations (1st quartile) cultivate an average of 10.36 Ha of land and that amount declines to 1.4 Ha for those in the predominantly female (4th quartile). Is this apparent gender effect on land access a function of age of organisation? It was reported earlier that newly formed organisations had limited land access compared to the more established group. This hypothesis is rejected, however, as men's and women's groups do not vary by age, with all four quartiles reporting average years since establishment very close to the average of 4.73 years. Whether this land access disadvantage is

¹ Quartiles constitute a convenient method for grouping organisations by their degree of female membership. The 1st quartile is at the low end of the scale and contains the smallest share of female members (mean female membership of 27.4% for this group). The 4th quartile, by contrast, contains the highest share of female membership (mean female membership of 87.0%).

a function of the particular crops produced by predominantly women's groups is a question we will come back to below.

TABLE 11

Selected Organizational Characteristics by Percent Female Membership Quartiles (Cooperatives and Associations)					
Organizational Characteristic	Percent Female Membership Quartile				Total
	Low 1st Quartile	2nd Quartile	3rd Quartile	High 4th Quartile	
Total active Membership	46.2	69.8	58.5	44.9	54.7
Area under production (Ha)	10.36	10.92	4.13	1.40	6.68
Land owned by organisation (Ha)	0.89	0.72	0.26	0.25	0.53
Years since established	4.75	4.97	4.50	4.70	4.73
Percent sales in own district	65.8	73.7	74.0	81.5	73.7
Mean Inputs Investment index	5.41	5.35	5.38	5.31	5.36
Strength of internal competencies	2.32	2.24	2.09	2.27	2.23
Strength of external competencies	1.69	1.65	1.54	1.61	1.62
Nbr types of outside support received	0.79	1.07	1.21	1.23	1.07
Organizational strength (scale)	4.21	4.27	4.19	4.14	4.20
Total sale of fruits (FRW)	1,952,111	977,742	438,657	409,547	949,707
Total sale of veg (FRW)	8,260,723	2,627,339	1,196,345	2,415,888	3,656,351
Total sale other hort crops (FRW)	113,548	70,358	78,899	38,663	75,814
Total crop sales (FRW)	10,326,382	3,675,440	1,713,902	2,864,098	4,681,872
Total product sales (FRW)	107,811	798,346	97,606	7,883	246,137
Total crops & products sales (FRW)	10,434,192	4,473,785	1,811,507	2,871,981	4,928,010
FRW per day of labor	2,286	1,755	1,273	842	1,537
FRW per Ha of land	1,613,222	1,185,418	2,033,390	2,526,355	1,838,941
N	295	272	286	279	1,132

An important indicator of how connected associations are to various market options is how and where their products are sold. Earlier it was discovered that better prices were paid for product in Kigali and other more distant markets, compared to sales in the home district. This is perhaps the main reason producer groups so often stated a preference for selling to these higher-paying markets in the future. This difference seems to be tied to gender composition too, as higher female membership is associated with greater sales in the local, district market, at 81.5% for the high quartile and declining to 65.8% in the quartile with the lowest female membership.

If there are disadvantages in land access and market access, do these differences carry over to other, related areas such as access to inputs and various competencies, either internal or external to the association? The answer is no, there appear to be no disadvantages to predominantly women's groups in this regard. Comparing the inputs investment index across the four quartiles shows minimal variation. And in terms of self-assessed internal and external competencies in production, post-harvest handling, marketing, management and other areas, there is little difference from one quartile to the next.

However, when compared across crop production and productivity, the results in Table 11 bear witness to a strong gender effect. The high female quartiles report dramatically lower sales

(production) than observed for predominantly male groups. In value of total crop sales, for example, the high quartile averages 2.86 million FRW compared to 10.33 million FRW for the lowest female quartile. Though predominantly female groups tend to work more in vegetables than in fruits, the same pattern of lower production by these groups holds true across all crop categories—fruits, vegetables and other (specialty) crops. Thus, we conclude that the gender effect does not lie mainly in differences in the types of crops produced.

Lower sales across all of these crop categories are largely a function of limited land access, as pointed out above. But there is a very important nuance in these findings, one that provides some insight into the observed gender differences. While the higher female membership quartiles operate just a fraction of the land that low female quartiles operate, their levels of productivity tell a different story when measured as output per unit of land (Marginal Value Product of land—MVP Land) and per unit of labour (Marginal Value Product of Labour—MVP Labour). Figure 21 demonstrates that increasing female membership results in a precipitous decline in output (FRW) per day of *labour*. By contrast, increasing female membership yields precipitously higher output (FRW) per unit of *land*. In short, because of their disadvantaged land access the predominantly female groups are able to squeeze more out of the land they operate, but this comes at the cost of diminishing returns to labour.

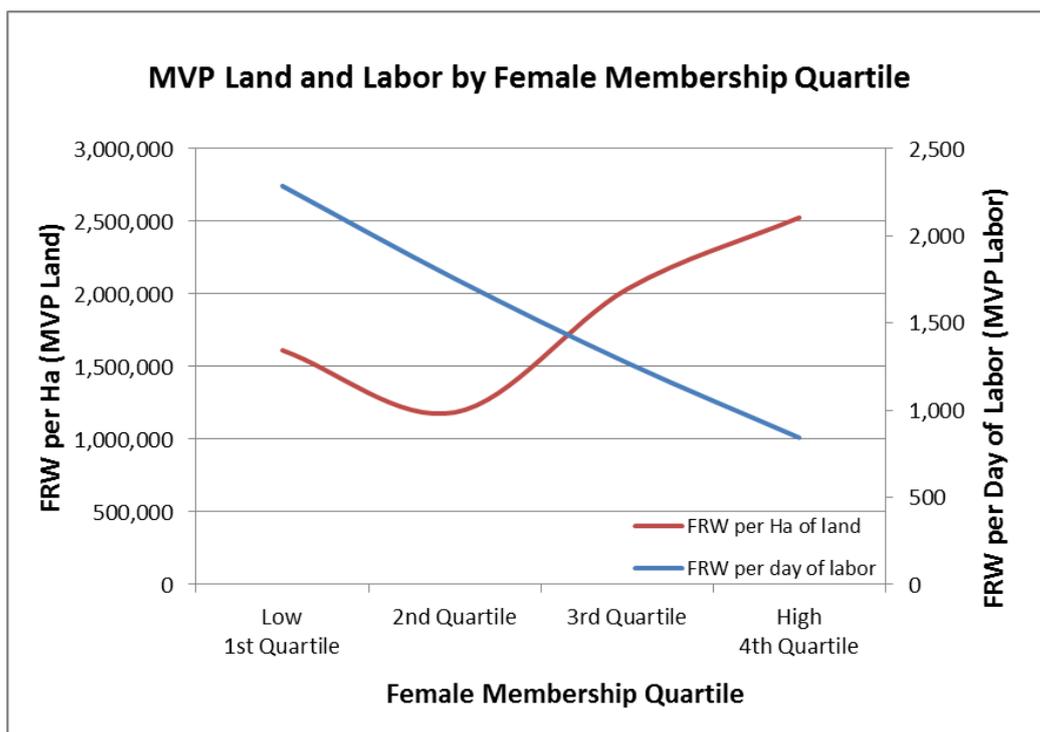


FIGURE 21

It is also noteworthy that the higher percent female membership is found especially in the Kigali and South provinces. Low female representation in horticulture cooperatives and associations is found in the North and the East provinces. The West province shows no bias in one direction or the other.

One final observation on gender differences in Rwanda horticulture is that predominantly female membership tends to attract a high level of support (tools, seed, etc.) from funding and

delivery agencies. As Table 11 shows, the number of different types of outside support climbs in direct proportion to the percentage of female membership. The lowest quartile receives an average of 0.79 types of support while those in the top quartile receive 1.23 types of support. The following section takes a summary look at external support for horticulture in Rwanda and how it is delivered and funded.

3.6.3 Partners & Support for Horticulture Organisations

As a promoted sector, one that the Ministry of Agriculture and NAEB emphasise as a lead sector for exports growth as well as for improved nutrition and incomes domestically, many agencies and support organisations, both local and international, have mobilised to help build capacity

TABLE 12

Types of Support Received by Organisations by Type, Delivery Partner and Funding Partner		
	N	%
Support Type		
Seeds	288	23.5%
Fertiliser/pesticides	90	7.4%
Tools	178	14.5%
Production practices	291	23.8%
Post-harvest support	9	0.7%
Processing support	21	1.7%
Marketing support	13	1.1%
Management support	106	8.7%
Financing (FRW)	101	8.3%
Financing info	27	2.2%
Other support type	100	8.2%
<i>Total</i>	<i>1224</i>	<i>100.0%</i>
Delivery Partner		
Gov't agency/service	417	39.2%
Local organisation	119	11.2%
International donor	284	26.7%
International org	91	8.6%
Private sector company	139	13.1%
Other delivery partner	13	1.2%
<i>Total</i>	<i>1063</i>	<i>100.0%</i>
Funding Partner		
Rwanda district govt	229	19.1%
Rwanda other govt agency	201	16.8%
International agency	80	6.7%
Other funding partner	688	57.4%
<i>Total</i>	<i>1198</i>	<i>100.0%</i>

and provide incentives for expanded horticulture development. Organisations were asked about the types of support they received over the past 24 months from outside groups and about how those support programs were funded and delivered. Overall, 44.2% of organisations reported having received outside support during the previous 24 months. Half of these organisations received just one type of support but others reported multiple types and sources.

Table 12 summarises the baseline survey results on these questions about the types, delivery and funding sources of the support they received. The three most common types of material support received by organisations are: tools, seeds and other improved inputs. Support in the form of capacity building is most heavily concentrated in production practices and to a lesser degree in management.

The principle delivery partners are government agencies, both domestic (39.2%) and international (26.7%). International and domestic NGOs are also active in the delivery of inputs and capacity building support, together accounting for 19.8% of total support received. It is encouraging to also see the private sector engagement in partnerships with the organisations they work with. They are identified as the supporting partner 13.1% of the time, a figure that will be important to track over time as the sector becomes increasingly commercialised.

Delivery of support and services is often separate from the funding of that support and it is often the case that organisations are not aware that the two are separate. That is likely the reason that 57.4% of organisations list “other” as the

funding partner, a surrogate for “don’t know.” But for those who are aware of the difference, the primary funding sources identified are the district government (19.1%), other domestic agencies such as NAEB and RAB (16.8%), and international donors.

3.7 Largeholder Horticulture Producers

Section Contents

3.7.1	Largeholder Horticulture Producers	54
3.7.2	Largeholder Crop Production	55

About the Data in this Section

Questionnaire Section	Questions on...	Level	N
Largeholder survey	ID and diverse areas (main questionnaire)	Largeholder	550
Largeholder survey	Crops grown	Crop	974

Section Tables, Figures and Maps

Figure 22.	Distribution of Horticulture Largeholder Producers by Province and District	54
Table 13.	Horticulture Crops Produced by Individual Largeholder Producers by Province	55
Table 14.	Individual Largeholder Selected Characteristics by Province.....	56



3.7.1 Largeholder Horticulture Producers

In addition to the survey of organisations, the RHOS 2013 also listed and surveyed all of Rwanda’s individual largeholder horticulture producers. Largeholder producers were defined by the same criteria as were organisations. As discussed in the methodology section of this report, to qualify for the survey largeholder farmers had to satisfy one of the following criteria: 1) cultivate at least 0.5 Ha in open-field horticulture crops, 2) cultivate 100 m² or more of greenhouse crops, or 3) register gross sales of at least 5,000,000 FRW over the past 12 months. Overall, 550 independent largeholders met at least one of the three criteria. Data collected on these largeholder farmers were limited to a small number of questions on principle crops, total horticulture sales, area planted in horticulture crops and area in greenhouses.

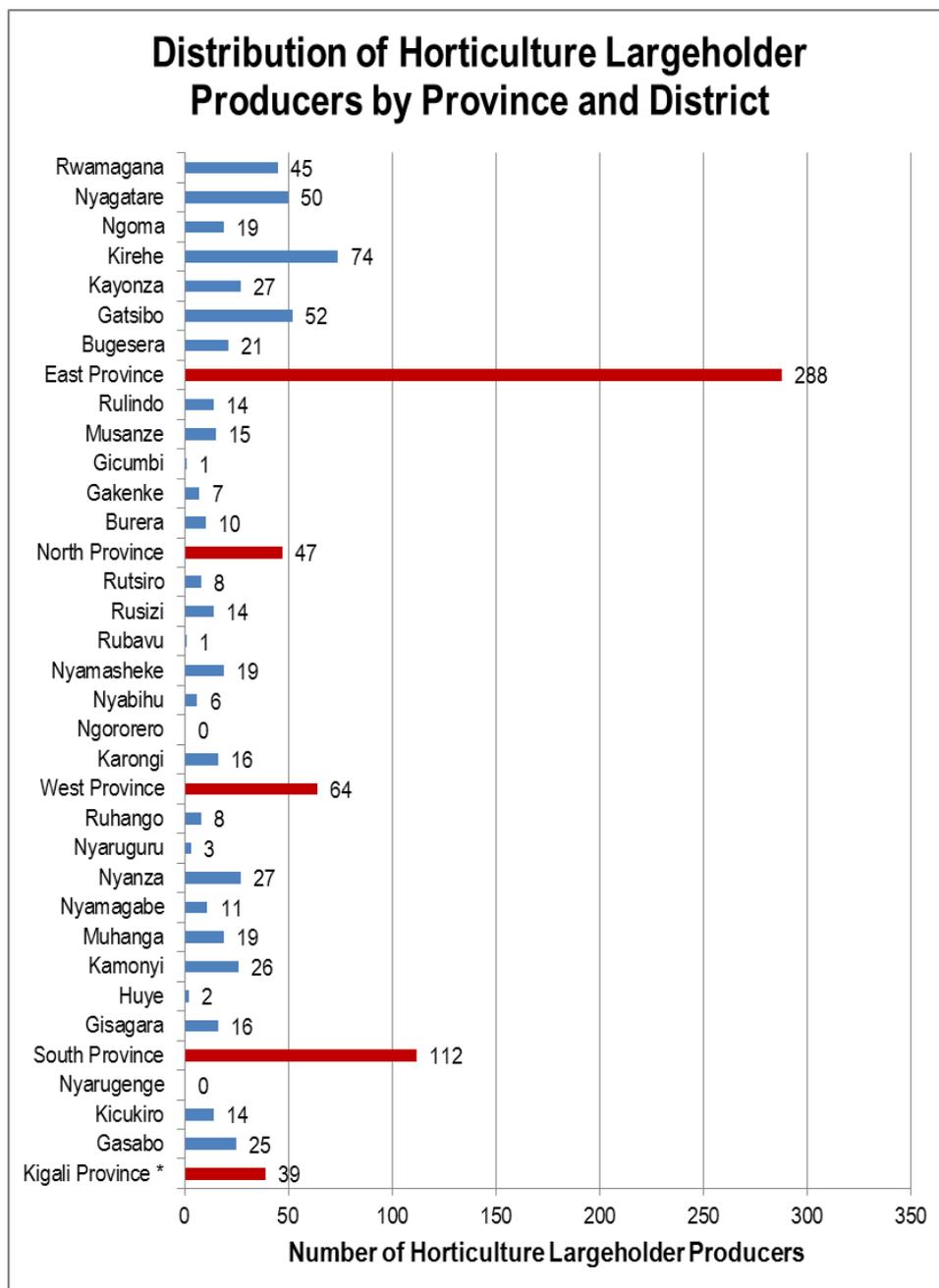


FIGURE 22

The geographic distribution of individual largeholder horticulture producers can be seen in Figure 22. There is broad geographic representation with nearly all districts in Rwanda included. In this respect it follows a similar pattern to the distribution of organisations discussed in section 3.1, yet with one significant exception. All seven districts in the East province show large numbers of largeholder horticulture producers. Overall, the East is home to over half of the country’s largeholder farmers and they stand out both in their elevated level of production of vegetables and in the amount of land under cultivation in horticulture.

3.7.2 Largeholder Crop Production

Table 13 presents the principle crop categories grown by Rwanda’s largeholders by major crop category and province. Vegetable production is identified as the overall primary crop group at 68.1%, with fruit production being the next most important at 30.4%. Other specialty crops receive negligible investment from this producer group as all flowers, nuts, herbs and spices and other crops in this category amount to just 1.5% of crops produced. In other words, largeholder producers do not differ substantially in their crop choices from horticulture organisations, with an emphasis on vegetable production, most notably tomato and cabbage. Among fruits, largeholders again mimic the organisations in their focus on pineapple, passion fruit and tamarillos. It appears that the factors that drive crop choice are largely the same for both organisations and largeholder producers.

TABLE 13

	Province					
	Total %	Kigali %	South %	West %	North %	East %
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Fruits	30.4%	15.3%	39.6%	37.8%	44.8%	23.7%
Vegetables	68.1%	76.5%	59.9%	61.5%	54.0%	75.2%
Herbs & Spices	0.4%	0.0%	0.0%	0.7%	1.1%	0.4%
Nuts	0.4%	1.2%	0.0%	0.0%	0.0%	0.7%
Cut Flowers	0.7%	7.1%	0.5%	0.0%	0.0%	0.0%
Flowers/herbs for Processing	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Processed Hort Products	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
N	974	85	212	143	87	447

Largeholder horticulture producers are also broadly distributed across the country and their regional variation in crop choice follows the pattern set by organisations. Fruits are grown in greater abundance in the North and the high vegetable count is found in the Kigali.

Overall crop and product sales by individual largeholder farmers is over 527 million FRW with nearly half of that coming from the East province at 250 million FRW (see Table 14). This elevated figure is not because farmers in the East are more productive. In fact, their mean production is among the lowest in the country at 0.87 million FRW per farm. The difference is that there are so many largeholder producers in the East and their farms are the largest on

average at 1.48 Ha. Compared in terms of total area (Ha), farmers in the East cultivate nearly 60% of all largeholder land in the country.

Among the 550 largeholder farmers only three of them operate greenhouses, with each at approximately 250 SqM. One is located in Kigali, another in the South and the third in the East, the three main vegetable growing regions in the country.

TABLE 14

Characteristic		Province					
		Total	Kigali	South	West	North	East
Crop/Product sales	FRW	527,525,142	85,114,200	87,343,942	64,199,200	40,198,000	250,669,800
	%	100.0%	16.1%	16.6%	12.2%	7.6%	47.5%
	Mean	959,137	2,182,415	779,857	1,003,112	855,277	870,381
Area in horticulture crops	Ha	711.98	37.56	141.51	59.96	49.11	423.84
	%	100.0%	5.3%	19.9%	8.4%	6.9%	59.5%
	Mean	1.30	0.99	1.27	0.94	1.04	1.48
Area in greenhouse	SqM	770	250	256	0	0	264
	%	100.0%	32.5%	33.2%	0.0%	0.0%	34.3%
	N	550	39	112	64	47	288

4 FUTURE TRACKING OF HORTICULTURE ORGANISATIONS

This section presents some considerations for how MINAGRI/NAEB can continue to track changes in the horticulture sector on a more regular basis. The RHOS 2013 is a census of horticulture organisations and largeholder producers in Rwanda. It is a comprehensive survey that provides a benchmark for future comparison. A detailed survey program like the RHOS 2013 is neither necessary nor feasible, financially or otherwise, to complete on an annual basis. More appropriate will be to conduct a similar enumeration five years from now. That will give sector managers and investors an important gauge to assess how the diverse and dynamic components of the sector are evolving and how those components are responding to investments, promotion programs and changing consumer demand for horticulture products in Rwanda.

Yet, waiting five years for the next census of horticulture associations will not satisfy the need for a focused, ongoing system for tracking some of the major parameters of the sector. For a small investment of resources MINAGRI/NAEB will be in a position to implement a targeted system that will provide essential measures of how and where the sector is growing. The subsections below are intended to provide a starting point for the discussion. We frame out a set of recommended variables for regular tracking as well as some of the options and considerations for how, and how often, data can be collected, processed and reported.

Data Updates. The variables to be updated on a regular (e.g., annual) basis must be selected carefully by MINAGRI/NAEB as the principles of resource availability and cost efficiency will undoubtedly drive/limit what can and cannot be achieved during the “intercensal” period. Perhaps the most important variables to track will be simply: 1) the number of organisations, 2) their geographic locations, 3) their male and female membership, 4) the principle crops and products that are grown and produced, and 5) their up-to-date contacts. These variables alone will be indicative of the pace and direction of growth in the sector. They are also the key variables needed for keeping a directory of horticulture organisations.

A second tier of variables may include total production volumes (Kg/Lt) and sales (FRW). These data will be especially important for estimating total annual production and sales and are similarly indicative of the growth of the sector. These figures will effectively be the equivalent of the MINAGRI’s annual estimates of farm production.

A third tier of variables that can be considered for regular tracking can be those variables that are especially indicative of modernisation of the sector. They include square meters of greenhouse production, installation of irrigation systems, and attaining industry certifications.

Data Collection & Processing. The variables listed above are similar to those collected for the individual largeholder farmers. These data were collected mostly through relatively short telephone interviews. An annual effort using five province-level enumerators for 4 weeks will likely be sufficient for collecting the 6-12 variables identified for regular tracking. Data collection should begin with the listing and key variables collected during the RHOS 2013. Ideally this will be a listing that shows all current data on one line and leaves the subsequent line open for any updates/changes.

The major challenge will be not be the data collection phase of the operation; it will be the task of keeping the listing of organisations up-to-date. While the current database is believed to be quite complete, as of December, 2013, we know that the horticulture landscape is changing very rapidly. Figures presented in this report suggest that the number of horticulture organisations is doubling every 3-4 years. It is likely that growth in the number of organisations will continue for at least a few more years as government programs and promotion take effect. Perhaps more likely in the long run is that we will see the number of organisations level off but their membership continue to expand as existing organisations become more established, gain access to additional land and attract new members.

The variables recommended above for collection will enable MINAGRI/NAEB to track such changes with some precision. Updating the listing with newly formed organisations will require coordination with the district agricultural offices. The enumerators will be required to schedule visits in each district to go over the listing and identify organisations that should be added, as well as those that have dissolved. If the lists are kept up yearly the task of updating them will be relatively simple. The longer the wait the greater the effort required. Enumerators for the RHOS 2013 took an average of five days to complete the listing operation in their assigned districts. That could be reduced to 2 days per district if the listings are updated annually.

Cleaning and processing of the data can be completed in SPSS and should take one person less than a week, from start finish. The major tables and graphs can be decided upon in advance and once the syntax is written it will serve for subsequent years as well. Each year of data should be merged onto the master file that will contain each successive year of data. The first variable in the file should be “enumeration year” and that will enable future time series analysis and comparisons/graphics over multiple years. Potentially the data (minus the names and contacts) can be made available online for other users, assuming any confidentiality concerns can be addressed.

ANNEXES

- **Tables**
- **Maps**
- **Questionnaire**
- **RHOS Database Variables and Parameters by Questionnaire Section**

Table 1. Horticulture Sales Value (FRW) and Volumes (Kg) by Crop

Horticulture Sales Value (FRW) and Volumes (Kg) by Crop							
Crop & Crop Group	N	Value of Horticulture Sales (FRW)			Volume of Horticulture Sales (KG)		
		Mean Value of Sales (FRW)	Total Value of Sales (FRW)	Percent of Total Value of Sales (%)	Mean Volume of Sales (KG)	Total Volume of Sales (FRW)	Pct Total Volume of Sales (%)
Total Hort Crops	3,171	1,682,963	5,334,993,326	100.0%	9,477	29,728,155	100.0%
Total Fruits	647	1,671,173	1,081,249,203	20.3%	9,303	5,935,558	20.0%
Apple	4	522,500	2,090,000	0.0%	331	1,325	0.0%
Avocado	30	120,489	3,614,665	0.1%	848	24,603	0.1%
Banana (fruit)	11	810,470	8,915,175	0.2%	6,488	64,880	0.2%
Cape Gooseberry	4	125,000	500,000	0.0%	250	1,000	0.0%
Lemon	6	303,333	1,820,000	0.0%	1,967	11,800	0.0%
Mango	24	456,736	10,961,665	0.2%	5,434	124,990	0.4%
Orange	17	198,627	3,376,665	0.1%	159	2,550	0.0%
Papaya	12	27,417	329,000	0.0%	93	1,116	0.0%
Passion fruit	120	3,102,506	372,300,750	7.0%	8,829	1,033,050	3.5%
Pineapple	227	1,457,790	330,918,388	6.2%	16,713	3,793,914	12.8%
Strawberry	8	2,609,375	20,875,000	0.4%	7,827	62,617	0.2%
Tamarillos	155	2,055,580	318,614,895	6.0%	5,073	781,218	2.6%
Other fruit	29	239,069	6,933,000	0.1%	1,161	32,495	0.1%
Total Vegetables	2,403	1,717,400	4,125,193,962	77.3%	9,830	23,532,832	79.2%
Cabbage	548	661,967	362,757,834	6.8%	6,942	3,797,258	12.8%
Carrot	341	703,443	239,874,171	4.5%	4,905	1,667,792	5.6%
Eggplant (local)	282	1,199,395	338,229,305	6.3%	6,183	1,743,501	5.9%
French beans	88	2,114,005	186,032,400	3.5%	13,876	1,221,109	4.1%
Leek	15	99,147	1,487,210	0.0%	1,044	15,666	0.1%
Mushrooms	45	1,165,807	52,461,300	1.0%	1,591	71,607	0.2%
Onion	233	3,733,879	869,993,848	16.3%	18,250	4,233,931	14.2%
Pepper	33	235,843	7,782,820	0.1%	477	15,756	0.1%
Sweet pepper	164	3,745,431	614,250,762	11.5%	9,790	1,595,836	5.4%
Tomato	300	4,460,778	1,333,772,550	25.0%	28,228	8,440,051	28.4%
Other vegetable	354	334,892	118,551,762	2.2%	2,087	730,325	2.5%
Total Herbs & Spices	27	255,585	6,900,800	0.1%	1,325	34,438	0.1%
Garlic	3	1,520,000	4,560,000	0.1%	6,400	19,200	0.1%
Parsley	23	88,730	2,040,800	0.0%	556	12,238	0.0%
Other H&S	1	300,000	300,000	0.0%	3,000	3,000	0.0%
Total Nuts	3	18,960,000	56,880,000	1.1%	27,667	83,000	0.3%
Macadamia	3	18,960,000	56,880,000	1.1%	27,667	83,000	0.3%
Total Cut Flowers	76	809,386	61,513,361	1.2%	2,079	126,830	0.4%
Aromas	16	938,056	15,008,892	0.3%	4,654	65,154	0.2%
Calla lilies	2	238,334	476,667	0.0%	50	50	0.0%
Carnations	2	233,834	467,667	0.0%	1	1	0.0%
Chrysanthemum	1	466,667	466,667	0.0%	0	0	0.0%
Gladiolus	2	252,334	504,667	0.0%	137	137	0.0%
Pastels	1	466,667	466,667	0.0%	0	0	0.0%
Roses	8	1,024,583	8,196,667	0.2%	297	1,780	0.0%
Saint Joseph (Lys)	6	636,111	3,816,667	0.1%	930	3,720	0.0%
Other cut flower	38	844,968	32,108,800	0.6%	1,647	55,988	0.2%
Total Processing Flowers	15	217,067	3,256,000	0.1%	1,033	15,497	0.1%
Geranium Lemon grass	2	250,000	500,000	0.0%	1,529	3,057	0.0%
Patchouli	1	516,000	516,000	0.0%	1,290	1,290	0.0%
Other processing flowers	12	186,667	2,240,000	0.0%	929	11,150	0.0%

Table 2. Horticulture Sales Value (FRW) by Crop and Province

Horticulture Sales Value by Crop and Province, 2013													
Crop & Crop Group	Province												
	Rwanda		Kigali		South		West		North		East		
	N	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)	Total Value of Sales (FRW)	Pct of Total Value of Sales (%)
Total Hort Crops	3,171	5,334,993,326	100.0%	468,777,144	100.0%	1,980,773,200	100.0%	1,313,044,544	100.0%	694,985,745	100.0%	877,412,693	100.0%
Total Fruits	647	1,081,249,203	20.3%	11,955,100	2.6%	56,990,600	2.9%	325,134,150	24.8%	506,129,600	72.8%	181,039,753	20.6%
Apple	4	2,090,000	0.0%	2,000,000	0.0%	0	0.0%	0	0.0%	90,000	0.0%	0	0.0%
Avocado	30	3,614,665	0.1%	838,000	0.2%	140,000	0.0%	570,000	0.0%	280,000	0.0%	1,786,665	0.2%
Banana (fruit)	11	8,915,175	0.2%	1,164,000	0.2%	500,000	0.0%	600,000	0.0%	42,000	0.0%	6,609,175	0.8%
Cape Gooseberry	4	500,000	0.0%	0	0.0%	0	0.0%	0	0.0%	500,000	0.1%	0	0.0%
Lemon	6	1,820,000	0.0%	600,000	0.1%	0	0.0%	1,060,000	0.1%	0	0.0%	160,000	0.0%
Mango	24	10,961,665	0.2%	545,000	0.1%	0	0.0%	9,180,000	0.7%	0	0.0%	1,236,665	0.1%
Orange	17	3,376,665	0.1%	600,000	0.1%	0	0.0%	110,000	0.0%	0	0.0%	2,666,665	0.3%
Papaya	12	329,000	0.0%	320,000	0.1%	0	0.0%	0	0.0%	9,000	0.0%	0	0.0%
Passion fruit	120	372,300,750	7.0%	1,098,100	0.2%	10,297,900	0.5%	83,503,400	6.4%	277,098,350	39.9%	303,000	0.0%
Pineapple	227	330,918,388	6.2%	2,470,000	0.5%	36,200,700	1.8%	54,547,950	4.2%	79,041,600	11.4%	158,658,138	18.1%
Strawberry	8	20,875,000	0.4%	0	0.0%	1,200,000	0.1%	17,275,000	1.3%	2,400,000	0.3%	0	0.0%
Tamarillos	155	318,614,895	6.0%	2,200,000	0.5%	6,902,000	0.3%	158,152,800	12.0%	145,828,650	21.0%	5,531,445	0.6%
Other fruit	29	6,933,000	0.1%	120,000	0.0%	1,750,000	0.1%	135,000	0.0%	840,000	0.1%	4,088,000	0.5%
Total Vegetables	2,403	4,125,193,962	77.3%	428,505,044	91.4%	1,918,677,000	96.9%	920,408,033	70.1%	180,175,945	25.9%	677,427,940	77.2%
Cabbage	548	362,757,834	6.8%	62,442,229	13.3%	154,253,950	7.8%	44,350,920	3.4%	42,200,825	6.1%	59,509,910	6.8%
Carrot	341	239,874,171	4.5%	16,009,730	3.4%	29,390,540	1.5%	162,301,011	12.4%	15,836,370	2.3%	16,336,520	1.9%
Eggplant (local)	282	338,229,305	6.3%	43,356,255	9.2%	211,211,650	10.7%	24,421,300	1.9%	21,916,100	3.2%	37,324,000	4.3%
French beans	88	186,032,400	3.5%	122,720,900	26.2%	57,226,500	2.9%	2,078,000	0.2%	1,793,000	0.3%	2,214,000	0.3%
Leek	15	1,487,210	0.0%	303,350	0.1%	100,000	0.0%	300,000	0.0%	304,000	0.0%	479,860	0.1%
Mushrooms	45	52,461,300	1.0%	19,355,100	4.1%	1,240,000	0.1%	5,052,600	0.4%	10,369,600	1.5%	16,444,000	1.9%
Onion	233	869,993,848	16.3%	44,396,168	9.5%	660,336,600	33.3%	78,417,380	6.0%	5,800,400	0.8%	81,043,300	9.2%
Pepper	33	7,782,820	0.1%	985,500	0.2%	2,333,420	0.1%	3,213,000	0.2%	43,400	0.0%	1,207,500	0.1%
Sweet pepper	164	614,250,762	11.5%	16,460,300	3.5%	514,378,400	26.0%	36,444,462	2.8%	7,606,000	1.1%	39,361,600	4.5%
Tomato	300	1,333,772,550	25.0%	76,570,950	16.3%	247,443,890	12.5%	540,834,860	41.2%	64,235,000	9.2%	404,687,850	46.1%
Other vegetable	354	118,551,762	2.2%	25,904,562	5.5%	40,762,050	2.1%	22,994,500	1.8%	10,071,250	1.4%	18,819,400	2.1%
Total Herbs & Spices	27	6,900,800	0.1%	0	0.0%	106,600	0.0%	4,694,000	0.4%	815,200	0.1%	1,285,000	0.1%
Garlic	3	4,560,000	0.1%	0	0.0%	0	0.0%	4,160,000	0.3%	400,000	0.1%	0	0.0%
Parsley	23	2,040,800	0.0%	0	0.0%	106,600	0.0%	534,000	0.0%	115,200	0.0%	1,285,000	0.1%
Other H&S	1	300,000	0.0%	0	0.0%	0	0.0%	0	0.0%	300,000	0.0%	0	0.0%
Total Nuts	3	56,880,000	1.1%	0	0.0%	0	0.0%	39,420,000	3.0%	0	0.0%	17,460,000	2.0%
Macadamia	3	56,880,000	1.1%	0	0.0%	0	0.0%	39,420,000	3.0%	0	0.0%	17,460,000	2.0%
Total Cut Flowers	76	61,513,361	1.2%	25,777,000	5.5%	4,999,000	0.3%	22,872,361	1.7%	7,865,000	1.1%	0	0.0%
Aromas	16	15,008,892	0.3%	2,500,000	0.5%	4,000,000	0.2%	783,892	0.1%	7,725,000	1.1%	0	0.0%
Calla lilies	2	476,667	0.0%	0	0.0%	0	0.0%	476,667	0.0%	0	0.0%	0	0.0%
Carnations	2	467,667	0.0%	0	0.0%	1,000	0.0%	466,667	0.0%	0	0.0%	0	0.0%
Chrysanthemum	1	466,667	0.0%	0	0.0%	0	0.0%	466,667	0.0%	0	0.0%	0	0.0%
Gladolus	2	504,667	0.0%	0	0.0%	38,000	0.0%	466,667	0.0%	0	0.0%	0	0.0%
Pastels	1	466,667	0.0%	0	0.0%	0	0.0%	466,667	0.0%	0	0.0%	0	0.0%
Roses	8	8,196,667	0.2%	1,650,000	0.4%	480,000	0.0%	6,066,667	0.5%	0	0.0%	0	0.0%
Saint Joseph (Lys)	6	3,816,667	0.1%	2,220,000	0.5%	480,000	0.0%	1,066,667	0.1%	50,000	0.0%	0	0.0%
Other cut flower	38	32,108,800	0.6%	19,407,000	4.1%	0	0.0%	12,611,800	1.0%	90,000	0.0%	0	0.0%
Total Processing Flowers	15	3,256,000	0.1%	2,540,000	0.5%	0	0.0%	516,000	0.0%	0	0.0%	200,000	0.0%
Geranium Lemon grass	2	500,000	0.0%	300,000	0.1%	0	0.0%	0	0.0%	0	0.0%	200,000	0.0%
Patchouli	1	516,000	0.0%	0	0.0%	0	0.0%	516,000	0.0%	0	0.0%	0	0.0%
Other processing flowers	12	2,240,000	0.0%	2,240,000	0.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Table 3. Horticulture Crop Production (Kg) Sales (Kg) & Difference between Production and Sales by Crop Category, Province and District

Horticulture Crop Production and Sales (KG) by Crop (Producer Organisations)							
Crop/Crop Group	N	Crop Production		Crops Sold		Difference (Sold - Produced)	
		KG	%	KG	%	KG	(%)
Total Hort Crops	3,094	29,727,769	100.0%	26,789,553	100.0%	-2,938,216	-9.9%
Total Fruits	621	6,338,494	21.3%	5,595,958	20.9%	-742,536	-11.7%
Passion fruit	116	1,087,095	3.7%	992,050	3.7%	-95,045	-8.7%
Pineapple	221	4,309,403	14.5%	3,769,794	14.1%	-539,609	-12.5%
Tamarillos	150	701,833	2.4%	640,218	2.4%	-61,615	-8.8%
Other fruit	134	240,163	0.8%	193,896	0.7%	-46,267	-19.3%
Total Vegetables	2,353	23,149,474	77.9%	20,951,830	78.2%	-2,197,644	-9.5%
Cabbage	543	4,360,176	14.7%	3,440,198	12.8%	-919,978	-21.1%
Carrot	333	1,577,450	5.3%	1,431,382	5.3%	-146,068	-9.3%
Eggplant (local)	275	2,160,133	7.3%	1,561,431	5.8%	-598,702	-27.7%
French beans	86	510,506	1.7%	495,909	1.9%	-14,597	-2.9%
Mushrooms	45	77,447	0.3%	71,607	0.3%	-5,840	-7.5%
Onion	225	4,246,921	14.3%	4,078,511	15.2%	-168,410	-4.0%
Pepper	32	17,837	0.1%	12,396	0.0%	-5,441	-30.5%
Sweet pepper	160	1,581,280	5.3%	1,539,054	5.7%	-42,226	-2.7%
Tomato	295	7,724,846	26.0%	7,686,951	28.7%	-37,895	-0.5%
Other vegetable	359	892,878	3.0%	634,391	2.4%	-258,487	-28.9%
Total Other Hort Crops	120	239,801	0.8%	241,765	0.9%	1,964	0.8%
All Herbs & Spices	26	16,533	0.1%	16,438	0.1%	-95	-0.6%
Macadamia nut	3	83,050	0.3%	83,000	0.3%	-50	-0.1%
All cut flowers	76	135,321	0.5%	126,830	0.5%	-8,491	-6.3%
All processing flowers	15	4,897	0.0%	15,497	0.1%	10,600	216.5%

Table 4. Horticulture Sales Value (FRW) by Crop Category, Province and District

Horticulture Sales Value (FRW) by Crop Category, Province and District									
Province & District	N	Crop Category							
		Total Horticulture Crop Sales (FRW)		Fruit Crop Sales (FRW)		Vegetable Crop Sales (FRW)		Other Horticulture Crop Sales (FRW)	
		FRW	%	FRW	%	FRW	%	FRW	%
RWANDA	3,171	5,334,993,326	100.0%	1,081,249,203	100.0%	4,125,193,962	100.0%	128,550,161	100.0%
Kigali Province	397	468,777,144	8.8%	11,955,100	1.1%	428,505,044	10.4%	28,317,000	22.0%
Gasabo	244	360,861,000	6.8%	9,961,100	0.9%	323,759,900	7.8%	27,140,000	21.1%
Kicukiro	108	51,911,190	1.0%	294,000	0.0%	50,440,190	1.2%	1,177,000	0.9%
Nyarugenge	45	56,004,954	1.0%	1,700,000	0.2%	54,304,954	1.3%	0	0.0%
South Province	677	1,980,773,200	37.1%	56,990,600	5.3%	1,918,677,000	46.5%	5,105,600	4.0%
Gisagara	37	7,756,970	0.1%	4,820,000	0.4%	2,936,970	0.1%	0	0.0%
Huye	189	62,479,170	1.2%	1,225,000	0.1%	56,253,170	1.4%	5,001,000	3.9%
Kamonyi	156	1,818,762,540	34.1%	14,594,100	1.3%	1,804,168,440	43.7%	0	0.0%
Muhanga	67	33,935,620	0.6%	10,753,000	1.0%	23,132,620	0.6%	50,000	0.0%
Nyamagabe	71	13,526,250	0.3%	11,449,600	1.1%	2,076,650	0.1%	0	0.0%
Nyanza	75	18,399,050	0.3%	70,000	0.0%	18,274,450	0.4%	54,600	0.0%
Nyaruguru	38	3,491,500	0.1%	1,940,500	0.2%	1,551,000	0.0%	0	0.0%
Ruhango	44	22,422,100	0.4%	12,138,400	1.1%	10,283,700	0.2%	0	0.0%
West Province	716	1,313,044,544	24.6%	325,134,150	30.1%	920,408,033	22.3%	67,502,361	52.5%
Karongi	85	92,504,300	1.7%	42,313,000	3.9%	10,671,300	0.3%	39,520,000	30.7%
Ngororero	30	65,003,000	1.2%	62,459,500	5.8%	2,543,500	0.1%	0	0.0%
Nyabihu	67	100,034,861	1.9%	66,603,200	6.2%	32,915,661	0.8%	516,000	0.4%
Nyamasheke	87	18,908,080	0.4%	11,388,400	1.1%	7,519,680	0.2%	0	0.0%
Rubavu	254	283,751,593	5.3%	43,297,600	4.0%	213,357,632	5.2%	27,096,361	21.1%
Rusizi	136	659,440,260	12.4%	13,870,000	1.3%	645,230,260	15.6%	340,000	0.3%
Rutsiro	57	93,402,450	1.8%	85,202,450	7.9%	8,170,000	0.2%	30,000	0.0%
North Province	505	694,985,745	13.0%	506,129,600	46.8%	180,175,945	4.4%	8,680,200	6.8%
Burera	42	13,792,120	0.3%	10,302,000	1.0%	3,030,120	0.1%	460,000	0.4%
Gakenke	89	224,781,100	4.2%	204,766,100	18.9%	20,015,000	0.5%	0	0.0%
Gicumbi	202	230,882,775	4.3%	176,794,850	16.4%	53,917,725	1.3%	170,200	0.1%
Musanze	41	149,395,650	2.8%	98,873,650	9.1%	50,522,000	1.2%	0	0.0%
Rulindo	131	76,134,100	1.4%	15,393,000	1.4%	52,691,100	1.3%	8,050,000	6.3%
East Province	876	877,412,693	16.4%	181,039,753	16.7%	677,427,940	16.4%	18,945,000	14.7%
Bugesera	175	223,461,830	4.2%	20,708,850	1.9%	202,357,980	4.9%	395,000	0.3%
Gatsibo	252	80,830,360	1.5%	9,460,000	0.9%	71,090,360	1.7%	280,000	0.2%
Kayonza	112	206,759,980	3.9%	5,422,280	0.5%	200,927,700	4.9%	410,000	0.3%
Kirehe	65	137,207,423	2.6%	55,191,823	5.1%	81,815,600	2.0%	200,000	0.2%
Ngoma	128	84,284,435	1.6%	56,191,835	5.2%	27,792,600	0.7%	300,000	0.2%
Nyagatare	71	61,584,065	1.2%	22,478,965	2.1%	38,905,100	0.9%	200,000	0.2%
Rwamagana	73	83,284,600	1.6%	11,586,000	1.1%	54,538,600	1.3%	17,160,000	13.3%

Table 5. Horticulture Sales Volume (Kg) by Crop Category, Province and District

Horticulture Sales Volume (Kg) by Crop Category, Province and District									
Province & District		Crop Category							
		Horticulture Crop Sales (KG)		Fruit Crop Sales (KG)		Vegetable Crop Sales (KG)		Other Horticulture Crop Sales (KG)	
		N	KG	%	KG	%	KG	%	KG
RWANDA	3,171	29,728,155	100.0%	5,935,558	100.0%	23,532,832	100.0%	259,765	100.0%
Kigali Province	397	3,799,510	12.8%	38,896	0.7%	3,728,784	15.8%	31,830	12.3%
Gasabo	244	3,068,888	10.3%	32,716	0.6%	3,011,812	12.8%	24,360	9.4%
Kicukiro	108	260,038	0.9%	580	0.0%	251,988	1.1%	7,470	2.9%
Nyarugenge	45	470,584	1.6%	5,600	0.1%	464,984	2.0%	0	0.0%
South Province	677	9,170,344	30.8%	1,102,286	18.6%	8,062,910	34.3%	5,148	2.0%
Gisagara	37	63,485	0.2%	26,850	0.5%	36,635	0.2%	0	0.0%
Huye	189	415,294	1.4%	7,455	0.1%	403,281	1.7%	4,558	1.8%
Kamonyi	156	7,389,946	24.9%	104,146	1.8%	7,285,800	31.0%	0	0.0%
Muhanga	67	165,009	0.6%	49,230	0.8%	115,279	0.5%	500	0.2%
Nyamagabe	71	56,366	0.2%	41,795	0.7%	14,571	0.1%	0	0.0%
Nyanza	75	98,537	0.3%	1,200	0.0%	97,247	0.4%	90	0.0%
Nyaruguru	38	30,845	0.1%	7,405	0.1%	23,440	0.1%	0	0.0%
Ruhango	44	950,862	3.2%	864,205	14.6%	86,657	0.4%	0	0.0%
West Province	716	5,672,678	19.1%	1,255,357	21.1%	4,283,265	18.2%	134,056	51.6%
Karongi	85	281,381	0.9%	121,886	2.1%	100,495	0.4%	59,000	22.7%
Ngororero	30	275,104	0.9%	251,827	4.2%	23,277	0.1%	0	0.0%
Nyabihu	67	464,148	1.6%	196,944	3.3%	265,914	1.1%	1,290	0.5%
Nyamasheke	87	154,594	0.5%	82,975	1.4%	71,619	0.3%	0	0.0%
Rubavu	254	1,760,227	5.9%	186,176	3.1%	1,502,005	6.4%	72,046	27.7%
Rusizi	136	2,358,960	7.9%	135,715	2.3%	2,221,645	9.4%	1,600	0.6%
Rutsiro	57	378,264	1.3%	279,834	4.7%	98,310	0.4%	120	0.0%
North Province	505	3,220,142	10.8%	1,678,631	28.3%	1,488,737	6.3%	52,774	20.3%
Burera	42	49,428	0.2%	15,720	0.3%	33,268	0.1%	440	0.2%
Gakenke	89	1,070,801	3.6%	929,682	15.7%	141,119	0.6%	0	0.0%
Gicumbi	202	837,879	2.8%	443,026	7.5%	394,519	1.7%	334	0.1%
Musanze	41	709,889	2.4%	221,958	3.7%	487,931	2.1%	0	0.0%
Rulindo	131	552,145	1.9%	68,245	1.1%	431,900	1.8%	52,000	20.0%
East Province	876	7,865,481	26.5%	1,860,388	31.3%	5,969,136	25.4%	35,957	13.8%
Bugesera	175	1,908,084	6.4%	170,660	2.9%	1,735,424	7.4%	2,000	0.8%
Gatsibo	252	591,860	2.0%	110,100	1.9%	481,360	2.0%	400	0.2%
Kayonza	112	1,907,375	6.4%	26,460	0.4%	1,880,215	8.0%	700	0.3%
Kirehe	65	1,592,250	5.4%	750,864	12.7%	840,386	3.6%	1,000	0.4%
Ngoma	128	837,267	2.8%	583,116	9.8%	253,751	1.1%	400	0.2%
Nyagatare	71	489,000	1.6%	119,788	2.0%	366,355	1.6%	2,857	1.1%
Rwamagana	73	539,645	1.8%	99,400	1.7%	411,645	1.7%	28,600	11.0%

Table 6. Horticulture Area Cultivated (Ha) by Crop Category, Province and District

Horticulture Area Cultivated (Ha) by Crop Category, Province and District									
Province & District		Crop Category							
		Total Fruits, Veg & Flowers		Fruits		Vegetables		Flowers	
		N	Ha	%	Ha	%	Ha	%	Ha
RWANDA	1,155	6,278	100.0%	3,627	100.0%	2,574	100.0%	77	100.0%
Kigali Province	110	308	4.9%	22	0.6%	259	10.0%	27	35.0%
Gasabo	61	194	3.1%	4	0.1%	187	7.2%	3	4.4%
Kicukiro	29	57	0.9%	18	0.5%	37	1.4%	2	2.7%
Nyarugenge	20	58	0.9%	1	0.0%	35	1.4%	22	27.9%
South Province	267	1,056	16.8%	296	8.2%	758	29.5%	1	1.9%
Gisagara	16	29	0.5%	17	0.5%	12	0.5%	0	0.0%
Huye	68	146	2.3%	7	0.2%	138	5.4%	1	1.2%
Kamonyi	50	395	6.3%	112	3.1%	283	11.0%	0	0.0%
Muhanga	27	198	3.1%	84	2.3%	114	4.4%	0	0.0%
Nyamagabe	40	41	0.7%	31	0.9%	10	0.4%	0	0.0%
Nyanza	24	178	2.8%	7	0.2%	171	6.6%	0	0.0%
Nyaruguru	21	21	0.3%	9	0.3%	12	0.4%	0	0.1%
Ruhango	21	49	0.8%	31	0.8%	18	0.7%	1	0.6%
West Province	294	1,061	16.9%	520	14.3%	510	19.8%	31	39.9%
Karongi	43	220	3.5%	181	5.0%	38	1.5%	1	0.6%
Ngororero	21	107	1.7%	60	1.7%	44	1.7%	3	3.9%
Nyabihu	32	57	0.9%	29	0.8%	23	0.9%	5	7.0%
Nyamasheke	46	151	2.4%	103	2.8%	49	1.9%	0	0.0%
Rubavu	72	294	4.7%	26	0.7%	246	9.6%	22	28.3%
Rusizi	51	133	2.1%	39	1.1%	95	3.7%	0	0.0%
Rutsiro	29	99	1.6%	83	2.3%	16	0.6%	0	0.0%
North Province	206	497	7.9%	259	7.1%	221	8.6%	17	21.5%
Burera	17	27	0.4%	12	0.3%	15	0.6%	1	1.4%
Gakenke	43	181	2.9%	159	4.4%	18	0.7%	4	5.2%
Gicumbi	77	111	1.8%	41	1.1%	70	2.7%	0	0.1%
Musanze	23	65	1.0%	13	0.3%	47	1.8%	5	7.1%
Rulindo	46	112	1.8%	35	1.0%	71	2.7%	6	7.8%
East Province	278	3,357	53.5%	2,530	69.7%	826	32.1%	1	1.7%
Bugesera	56	248	3.9%	81	2.2%	166	6.5%	0	0.4%
Gatsibo	54	182	2.9%	93	2.6%	88	3.4%	0	0.0%
Kayonza	23	140	2.2%	15	0.4%	125	4.9%	0	0.0%
Kirehe	31	1,368	21.8%	1,176	32.4%	192	7.4%	0	0.0%
Ngoma	54	1,111	17.7%	1,045	28.8%	67	2.6%	0	0.0%
Nyagatare	33	95	1.5%	64	1.8%	30	1.2%	1	1.3%
Rwamagana	27	214	3.4%	56	1.5%	158	6.1%	0	0.0%

Table 7. Value (FRW) and Volume (Kg) of Horticulture Processed Products by Province and District

Value (FRW) and Volume (KG) of Processed Products Sold by Horticulture Organizations in Rwanda, 2013 (Shown by Province and District)					
Province & District	N	Horticulture Processed Product Sales (FRW)		Horticulture Processed Product Sales (KG)	
		FRW	%	KG/LT	%
RWANDA TOTAL	40	1,794,356,400	100.0%	2,146,371	100.0%
Kigali Province *	0	1,461,580,000	81.5%	1,392,500	64.9%
Gasabo	0	60,000,000	3.3%	50,000	2.3%
Kicukiro	0	1,401,580,000	78.1%	1,342,500	0.0%
Nyarugenge	0	0	0.0%	0	0.0%
South Province	15	40,195,000	2.2%	79,590	3.7%
Gisagara	1	7,000,000	0.4%	14,000	0.7%
Huye	6	6,445,000	0.4%	43,990	2.0%
Kamonyi	2	6,160,000	0.3%	7,700	0.4%
Muhanga	0	0	0.0%	0	0.0%
Nyamagabe	4	15,350,000	0.9%	8,500	0.4%
Nyanza	0	0	0.0%	0	0.0%
Nyaruguru	0	0	0.0%	0	0.0%
Ruhango	2	5,240,000	0.3%	5,400	0.3%
West Province	7	22,620,000	1.3%	15,740	0.7%
Karongi	1	21,600,000	1.2%	8,640	0.4%
Ngororero	0	0	0.0%	0	0.0%
Nyabihu	0	0	0.0%	0	0.0%
Nyamasheke	1	0	0.0%	5,200	0.2%
Rubavu	2	200,000	0.0%	200	0.0%
Rusizi	2	700,000	0.0%	1,300	0.1%
Rutsiro	1	120,000	0.0%	400	0.0%
North Province	14	262,294,000	14.6%	645,449	30.1%
Burera	0	0	0.0%	0	0.0%
Gakenke	5	50,674,000	2.8%	19,464	0.9%
Gicumbi	9	211,620,000	11.8%	625,985	29.2%
Musanze	0	0	0.0%	0	0.0%
Rulindo	0	0	0.0%	0	0.0%
East Province	4	7,667,400	0.4%	13,092	0.6%
Bugesera	0	0	0.0%	0	0.0%
Gatsibo	0	0	0.0%	0	0.0%
Kayonza	0	0	0.0%	0	0.0%
Kirehe	1	500,000	0.0%	362	0.0%
Ngoma	2	6,966,000	0.4%	12,672	0.6%
Nyagatare	1	201,400	0.0%	58	0.0%
Rwamagana	0	0	0.0%	0	0.0%

*Includes Kg & FRW reported for Kigali processors in Horticulture Processors Database, NAEB 2013

Table 8. Horticulture Sales Value (FRW) by Crop and Province

Horticulture Sales Value (FRW) by Crop and Province													
Crop/Crop Group	Province												
	Rwanda		Kigali		South		West		North		East		
	N	Total Value of Sales (FRW)	Total Value of Sales (%)	Total Value of Sales (FRW)	Total Value of Sales (%)	Total Value of Sales (FRW)	Total Value of Sales (%)	Total Value of Sales (FRW)	Total Value of Sales (%)	Total Value of Sales (FRW)	Total Value of Sales (%)	Total Value of Sales (FRW)	Total Value of Sales (%)
Total Hort Crops	3,171	5,334,993,326	100.0%	468,777,144	100.0%	1,980,773,200	100.0%	1,313,044,544	100.0%	694,985,745	100.0%	877,412,693	100.0%
Total Fruits	647	1,081,249,203	20.3%	11,955,100	2.6%	56,990,600	2.9%	325,134,150	24.8%	506,129,600	72.8%	181,039,753	20.6%
Passion fruit	120	372,300,750	7.0%	1,098,100	0.2%	10,297,900	0.5%	83,503,400	6.4%	277,098,350	39.9%	303,000	0.0%
Pineapple	227	330,918,388	6.2%	2,470,000	0.5%	36,200,700	1.8%	54,547,950	4.2%	79,041,600	11.4%	158,658,138	18.1%
Tamarillos	155	318,614,895	6.0%	2,200,000	0.5%	6,902,000	0.3%	158,152,800	12.0%	145,828,650	21.0%	5,531,445	0.6%
Other fruit	145	59,415,170	1.1%	6,187,000	1.3%	3,590,000	0.2%	28,930,000	2.2%	4,161,000	0.6%	16,547,170	1.9%
Total Vegetables	2,403	4,125,193,962	77.3%	428,505,044	91.4%	1,918,677,000	96.9%	920,408,033	70.1%	180,175,945	25.9%	677,427,940	77.2%
Cabbage	548	362,757,834	6.8%	62,442,229	13.3%	154,253,950	7.8%	44,350,920	3.4%	42,200,825	6.1%	59,509,910	6.8%
Carrot	341	239,874,171	4.5%	16,009,730	3.4%	29,390,540	1.5%	162,301,011	12.4%	15,836,370	2.3%	16,336,520	1.9%
Eggplant (local)	282	338,229,305	6.3%	43,356,255	9.2%	211,211,650	10.7%	24,421,300	1.9%	21,916,100	3.2%	37,324,000	4.3%
French beans	88	186,032,400	3.5%	122,720,900	26.2%	57,226,500	2.9%	2,078,000	0.2%	1,793,000	0.3%	2,214,000	0.3%
Mushrooms	45	52,461,300	1.0%	19,355,100	4.1%	1,240,000	0.1%	5,052,600	0.4%	10,369,600	1.5%	16,444,000	1.9%
Onion	233	869,993,848	16.3%	44,396,168	9.5%	660,336,600	33.3%	78,417,380	6.0%	5,800,400	0.8%	81,043,300	9.2%
Pepper	33	7,782,820	0.1%	985,500	0.2%	2,333,420	0.1%	3,213,000	0.2%	43,400	0.0%	1,207,500	0.1%
Sweet pepper	164	614,250,762	11.5%	16,460,300	3.5%	514,378,400	26.0%	36,444,462	2.8%	7,606,000	1.1%	39,361,600	4.5%
Tomato	300	1,333,772,550	25.0%	76,570,950	16.3%	247,443,890	12.5%	540,834,860	41.2%	64,235,000	9.2%	404,687,850	46.1%
Other vegetable	369	120,038,972	2.3%	26,207,912	5.6%	40,862,050	2.1%	23,294,500	1.8%	10,375,250	1.5%	19,299,260	2.2%
Total Other Hort Crops	121	128,550,161	2.4%	28,317,000	6.0%	5,105,600	0.3%	67,502,361	5.1%	8,680,200	1.2%	18,945,000	2.2%
All Herbs & Spices	27	6,900,800	0.1%	-	0.0%	106,600	0.0%	4,694,000	0.4%	815,200	0.1%	1,285,000	0.1%
Macadamia nut	3	56,880,000	1.1%	-	0.0%	-	0.0%	39,420,000	3.0%	-	0.0%	17,460,000	2.0%
All cut flowers	76	61,513,361	1.2%	25,777,000	5.5%	4,999,000	0.3%	22,872,361	1.7%	7,865,000	1.1%	-	0.0%
All processing flowers	15	3,256,000	0.1%	2,540,000	0.5%	-	0.0%	516,000	0.0%	-	0.0%	200,000	0.0%

Table 9. Horticulture Sales Volume (Kg) by Crop and Province

Horticulture Sales Volume (Kg) by Crop and Province													
Province													
Crop/Crop Group	N	Rwanda		Kigali		South		West		North		East	
		Total Volume of Sales (KG)	Total Vol. of Sales (%)	Total Volume of Sales (KG)	Total Vol. of Sales (%)	Total Volume of Sales (KG)	Total Vol. of Sales (%)	Total Volume of Sales (KG)	Total Vol. of Sales (%)	Total Volume of Sales (KG)	Total Vol. of Sales (%)	Total Volume of Sales (KG)	Total Vol. of Sales (%)
Total Hort Crops	3,171	29,728,155	100.0%	3,799,510	100.0%	9,170,344	100.0%	5,672,678	100.0%	3,220,142	100.0%	7,865,481	100.0%
Total Fruits	647	5,935,558	20.0%	38,896	1.0%	1,102,286	12.0%	1,255,357	22.1%	1,678,631	52.1%	1,860,388	23.7%
Passion fruit	120	1,033,050	3.5%	1,187	0.0%	22,517	0.2%	345,680	6.1%	663,336	20.6%	330	0.0%
Pineapple	227	3,793,914	12.8%	10,750	0.3%	1,047,634	11.4%	325,545	5.7%	637,372	19.8%	1,772,613	22.5%
Tamarillos	155	781,218	2.6%	2,000	0.1%	8,685	0.1%	422,375	7.4%	340,448	10.6%	7,710	0.1%
Other fruit	145	327,376	1.1%	24,959	0.7%	23,450	0.3%	161,757	2.9%	37,475	1.2%	79,735	1.0%
Total Vegetables	2,403	23,532,832	79.2%	3,728,784	98.1%	8,062,910	87.9%	4,283,265	75.5%	1,488,737	46.2%	5,969,136	75.9%
Cabbage	548	3,797,258	12.8%	949,784	25.0%	1,069,045	11.7%	569,619	10.0%	542,894	16.9%	665,916	8.5%
Carrot	341	1,667,792	5.6%	240,327	6.3%	136,564	1.5%	1,048,890	18.5%	117,821	3.7%	124,190	1.6%
Eggplant (local)	282	1,743,501	5.9%	387,895	10.2%	708,574	7.7%	213,610	3.8%	159,936	5.0%	273,486	3.5%
French beans	88	1,221,109	4.1%	834,802	22.0%	346,195	3.8%	9,960	0.2%	11,212	0.3%	18,940	0.2%
Mushrooms	45	71,607	0.2%	43,874	1.2%	1,650	0.0%	3,517	0.1%	11,192	0.3%	11,374	0.1%
Onion	233	4,233,931	14.2%	112,460	3.0%	3,301,014	36.0%	440,912	7.8%	16,433	0.5%	363,112	4.6%
Pepper	33	15,756	0.1%	4,510	0.1%	2,312	0.0%	4,095	0.1%	434	0.0%	4,405	0.1%
Sweet pepper	164	1,595,836	5.4%	55,350	1.5%	1,046,890	11.4%	247,102	4.4%	26,487	0.8%	220,007	2.8%
Tomato	300	8,440,051	28.4%	866,684	22.8%	1,280,691	14.0%	1,573,395	27.7%	542,329	16.8%	4,176,952	53.1%
Other vegetable	369	745,991	2.5%	233,098	6.1%	169,975	1.9%	172,165	3.0%	59,999	1.9%	110,754	1.4%
Total Other Hort Crops	121	259,765	0.9%	31,830	0.8%	5,148	0.1%	134,056	2.4%	52,774	1.6%	35,957	0.5%
All Herbs & Spices	27	34,438	0.1%	-	0.0%	610	0.0%	26,240	0.5%	3,488	0.1%	4,100	0.1%
Macadamia nut	3	83,000	0.3%	-	0.0%	-	0.0%	54,000	1.0%	-	0.0%	29,000	0.4%
All cut flowers	76	126,830	0.4%	20,480	0.5%	4,538	0.0%	52,526	0.9%	49,286	1.5%	-	0.0%
All processing flowers	15	15,497	0.1%	11,350	0.3%	-	0.0%	1,290	0.0%	-	0.0%	2,857	0.0%

Table 10. Greenhouse and Other Buildings (SqM) Property of Horticulture Organisations (Shown by Building Type, Province and District)

Greenhouse and Other Buildings (SqM) Property of Horticulture Organisations (Shown by Building Type, Province and District)															
Province & District		Building Type													
		Greenhouse		Office Building		Warehouse		Collection Center		Packhouse		Cold Storage		Other Building	
		N	SqM	%	SqM	%	SqM	%	SqM	%	SqM	%	SqM	%	SqM
RWANDA TOTAL	1,155	27,678	100.0%	57,012	100.0%	7,085	100.0%	6,572	100.0%	956	100.0%	91	100.0%	6,361	100.0%
Kigali Province	110	9,452	34.1%	11,337	19.9%	298	4.2%	508	7.7%	40	4.2%	35	38.5%	598	9.4%
Gasabo	61	6,882	24.9%	1,039	1.8%	115	1.6%	408	6.2%	40	4.2%	35	38.5%	184	2.9%
Kicukiro	29	1,470	5.3%	274	0.5%	95	1.3%	12	0.2%	0	0.0%	0	0.0%	414	6.5%
Nyarugenge	20	1,100	4.0%	10,024	17.6%	88	1.2%	88	1.3%	0	0.0%	0	0.0%	0	0.0%
South Province	267	9,094	32.9%	24,784	43.5%	1,585	22.4%	1,456	22.2%	333	34.8%	5	5.5%	450	7.1%
Gisagara	16	0	0.0%	117	0.2%	30	0.4%	21	0.3%	16	1.7%	5	5.5%	0	0.0%
Huye	68	1,586	5.7%	21,993	38.6%	850	12.0%	1,154	17.6%	175	18.3%	0	0.0%	104	1.6%
Kamonyi	50	768	2.8%	1,153	2.0%	243	3.4%	241	3.7%	34	3.6%	0	0.0%	250	3.9%
Muhanga	27	0	0.0%	448	0.8%	158	2.2%	0	0.0%	48	5.0%	0	0.0%	0	0.0%
Nyamagabe	40	2,192	7.9%	36	0.1%	51	0.7%	20	0.3%	0	0.0%	0	0.0%	96	1.5%
Nyanza	24	1,208	4.4%	603	1.1%	96	1.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nyaruguru	21	3,340	12.1%	205	0.4%	-	0.0%	20	0.3%	0	0.0%	0	0.0%	0	0.0%
Ruhango	21	0	0.0%	228	0.4%	157	2.2%	0	0.0%	60	6.3%	0	0.0%	0	0.0%
West Province	294	1,184	4.3%	7,969	14.0%	1,536	21.7%	1,343	20.4%	134	14.0%	15	16.5%	566	8.9%
Karongi	43	0	0.0%	372	0.7%	12	0.2%	12	0.2%	20	2.1%	0	0.0%	0	0.0%
Ngororero	21	0	0.0%	592	1.0%	106	1.5%	538	8.2%	24	2.5%	0	0.0%	32	0.5%
Nyabihu	32	0	0.0%	303	0.5%	267	3.8%	100	1.5%	0	0.0%	0	0.0%	0	0.0%
Nyamasheke	46	32	0.1%	126	0.2%	80	1.1%	82	1.2%	20	2.1%	0	0.0%	0	0.0%
Rubavu	72	852	3.1%	5,796	10.2%	552	7.8%	286	4.4%	0	0.0%	15	16.5%	90	1.4%
Rusizi	51	0	0.0%	326	0.6%	466	6.6%	220	3.3%	70	7.3%	0	0.0%	24	0.4%
Rutsiro	29	300	1.1%	454	0.8%	53	0.7%	105	1.6%	0	0.0%	0	0.0%	420	6.6%
North Province	206	4,318	15.6%	3,185	5.6%	820	11.6%	814	12.4%	406	42.5%	6	6.6%	3,602	56.6%
Burera	17	0	0.0%	28	0.0%	240	3.4%	0	0.0%	153	16.0%	0	0.0%	0	0.0%
Gakenke	43	1,356	4.9%	1,085	1.9%	100	1.4%	80	1.2%	32	3.3%	0	0.0%	0	0.0%
Gicumbi	77	2,122	7.7%	754	1.3%	134	1.9%	176	2.7%	181	18.9%	0	0.0%	0	0.0%
Musanze	23	200	0.7%	893	1.6%	105	1.5%	56	0.9%	0	0.0%	0	0.0%	0	0.0%
Rulindo	46	640	2.3%	425	0.7%	241	3.4%	502	7.6%	40	4.2%	6	6.6%	3,602	56.6%
East Province	278	3,630	13.1%	9,737	17.1%	2,846	40.2%	2,451	37.3%	43	4.5%	30	33.0%	1,145	18.0%
Bugesera	56	192	0.7%	929	1.6%	603	8.5%	182	2.8%	0	0.0%	28	30.8%	463	7.3%
Gatsibo	54	1,250	4.5%	665	1.2%	359	5.1%	109	1.7%	13	1.4%	2	2.2%	0	0.0%
Kayonza	23	848	3.1%	316	0.6%	296	4.2%	136	2.1%	0	0.0%	0	0.0%	160	2.5%
Kirehe	31	0	0.0%	863	1.5%	736	10.4%	80	1.2%	0	0.0%	0	0.0%	522	8.2%
Ngoma	54	0	0.0%	622	1.1%	116	1.6%	973	14.8%	6	0.6%	0	0.0%	0	0.0%
Nyagatare	33	0	0.0%	5,245	9.2%	80	1.1%	395	6.0%	24	2.5%	0	0.0%	0	0.0%
Rwamagana	27	1,340	4.8%	1,097	1.9%	656	9.3%	576	8.8%	0	0.0%	0	0.0%	0	0.0%

**Table 11. Use of Irrigation Systems by Horticulture Organisations
(Shown by System Type, Province and District)**

Use of Irrigation Systems by Horticulture Organisations (Shown by System Type, Province and District)													
Province & District	N Total Orgs	Irrigation System Type											
		Drip		Hand Delivered		Groundwater Diversion		Storage Tanks (Gravity Fed)		Mechanical (Pumped)		Other Irrigation	
		N	%	N	%	N	%	N	%	N	%	N	%
RWANDA	1,155	49	100.0%	660	100.0%	7	100.0%	37	100.0%	93	100.0%	1	100.0%
Kigali Province	110	11	22.4%	78	11.8%	0	0.0%	3	8.1%	16	17.2%	0	0.0%
Gasabo	61	6	12.2%	49	7.4%	0	0.0%	1	2.7%	1	1.1%	0	0.0%
Kicukiro	29	3	6.1%	23	3.5%	0	0.0%	2	5.4%	15	16.1%	0	0.0%
Nyarugenge	20	2	4.1%	6	0.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
South Province	267	12	24.5%	158	23.9%	3	42.9%	18	48.6%	24	25.8%	0	0.0%
Gisagara	16	0	0.0%	11	1.7%	0	0.0%	0	0.0%	2	2.2%	0	0.0%
Huye	68	5	10.2%	49	7.4%	2	28.6%	4	10.8%	9	9.7%	0	0.0%
Kamonyi	50	0	0.0%	29	4.4%	1	14.3%	1	2.7%	4	4.3%	0	0.0%
Muhanga	27	0	0.0%	10	1.5%	0	0.0%	0	0.0%	2	2.2%	0	0.0%
Nyamagabe	40	4	8.2%	20	3.0%	0	0.0%	12	32.4%	5	5.4%	0	0.0%
Nyanza	24	2	4.1%	21	3.2%	0	0.0%	1	2.7%	2	2.2%	0	0.0%
Nyaruguru	21	0	0.0%	8	1.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Ruhango	21	1	2.0%	10	1.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
West Province	294	2	4.1%	161	24.4%	0	0.0%	1	2.7%	20	21.5%	0	0.0%
Karongi	43	0	0.0%	23	3.5%	0	0.0%	0	0.0%	1	1.1%	0	0.0%
Ngororero	21	0	0.0%	7	1.1%	0	0.0%	0	0.0%	2	2.2%	0	0.0%
Nyabihu	32	0	0.0%	22	3.3%	0	0.0%	0	0.0%	4	4.3%	0	0.0%
Nyamasheke	46	0	0.0%	15	2.3%	0	0.0%	0	0.0%	5	5.4%	0	0.0%
Rubavu	72	2	4.1%	44	6.7%	0	0.0%	0	0.0%	2	2.2%	0	0.0%
Rusizi	51	0	0.0%	34	5.2%	0	0.0%	0	0.0%	5	5.4%	0	0.0%
Rutsiro	29	0	0.0%	16	2.4%	0	0.0%	1	2.7%	1	1.1%	0	0.0%
North Province	206	7	14.3%	106	16.1%	1	14.3%	0	0.0%	2	2.2%	0	0.0%
Burera	17	1	2.0%	5	0.8%	0	0.0%	0	0.0%	1	1.1%	0	0.0%
Gakenke	43	2	4.1%	22	3.3%	1	14.3%	0	0.0%	0	0.0%	0	0.0%
Gicumbi	77	3	6.1%	59	8.9%	0	0.0%	0	0.0%	1	1.1%	0	0.0%
Musanze	23	0	0.0%	5	0.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Rulindo	46	1	2.0%	15	2.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
East Province	278	17	34.7%	157	23.8%	3	42.9%	15	40.5%	31	33.3%	1	100.0%
Bugesera	56	2	4.1%	31	4.7%	1	14.3%	2	5.4%	12	12.9%	1	100.0%
Gatsibo	54	2	4.1%	43	6.5%	0	0.0%	10	27.0%	4	4.3%	0	0.0%
Kayonza	23	7	14.3%	18	2.7%	1	14.3%	3	8.1%	5	5.4%	0	0.0%
Kirehe	31	3	6.1%	13	2.0%	0	0.0%	0	0.0%	2	2.2%	0	0.0%
Ngoma	54	0	0.0%	20	3.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Nyagatare	33	0	0.0%	13	2.0%	0	0.0%	0	0.0%	3	3.2%	0	0.0%
Rwamagana	27	3	6.1%	19	2.9%	1	14.3%	0	0.0%	5	5.4%	0	0.0%

**Table 12. Characteristics of Loans to Organisations over Past 24 Months
(Shown by Province and District)**

Characteristics of Loans to Organisations Over Past 24 Months (Shown by Province and District)						
Province & District	Total Orgs (N)	Loan Characteristics				
		Number of Loans	Sum of Loans (FRW)	Percent of Sum	Mean months left	Interest Rate
RWANDA	1,155	184	1,899,102,055	100.0%	8.0	9.7%
Kigali Province	110	15	48,720,000	2.6%	9.0	9.3%
Gasabo	61	7	21,880,000	1.2%	4.0	13.1%
Kicukiro	29	3	18,500,000	1.0%	14.0	6.3%
Nyarugenge	20	5	8,340,000	0.4%	12.0	5.6%
South Province	267	51	119,031,000	6.3%	9.0	9.4%
Gisagara	16	3	5,500,000	0.3%	9.0	17.3%
Huye	68	7	4,400,000	0.2%	1.0	17.0%
Kamonyi	50	14	48,100,000	2.5%	20.0	4.8%
Muhanga	27	8	34,200,000	1.8%	7.0	10.9%
Nyamagabe	40	6	9,140,000	0.5%	5.0	10.2%
Nyanza	24	4	5,511,000	0.3%	3.0	7.6%
Nyaruguru	21	2	1,600,000	0.1%	1.0	16.0%
Ruhango	21	7	10,580,000	0.6%	7.0	6.7%
West Province	294	32	624,400,000	32.9%	12.0	16.4%
Karongi	43	6	19,900,000	1.0%	16.0	15.1%
Ngororero	21	4	516,000,000	27.2%	18.0	18.3%
Nyabihu	32	6	8,700,000	0.5%	4.0	16.6%
Nyamasheke	46	3	3,600,000	0.2%	12.0	8.0%
Rubavu	72	7	40,200,000	2.1%	12.0	20.9%
Rusizi	51	4	10,800,000	0.6%	2.0	17.0%
Rutsiro	29	2	25,200,000	1.3%	30.0	12.0%
North Province	206	38	1,008,425,680	53.1%	8.0	9.3%
Burera	17	3	5,600,000	0.3%	5.0	7.3%
Gakenke	43	12	22,840,000	1.2%	8.0	13.1%
Gicumbi	77	17	24,462,680	1.3%	6.0	5.3%
Musanze	23	0	-	-	-	-
Rulindo	46	6	955,523,000	50.3%	17.0	14.8%
East Province	278	48	98,525,375	5.2%	4.0	5.9%
Bugesera	56	17	12,090,000	0.6%	3.0	2.3%
Gatsibo	54	6	5,482,000	0.3%	3.0	7.0%
Kayonza	23	3	1,787,375	0.1%	7.0	10.7%
Kirehe	31	2	21,600,000	1.1%	0.0	7.5%
Ngoma	54	8	14,000,000	0.7%	4.0	6.4%
Nyagatare	33	7	3,566,000	0.2%	2.0	9.4%
Rwamagana	27	5	40,000,000	2.1%	9.0	6.5%

Table 13. Selected Organisational Characteristics by Percent Female Membership Quartiles

Selected Organizational Characteristics by Percent Female Membership Quartiles						
Organizational Characteristic	Percent Female Membership Quartile				Total (percent)	N
	Low		High			
	1st Quartile (percent)	2nd Quartile (percent)	3rd Quartile (percent)	4th Quartile (percent)		
Main source of revenue						
Fruit sales	43.20%	37.60%	32.70%	31.40%	36.20%	402
Vegetable sales	53.30%	60.50%	63.70%	67.50%	61.20%	679
Other hort crop sales	2.10%	1.50%	2.50%	0.70%	1.70%	19
Hort processed product sales	1.40%	0.40%	1.10%	0.40%	0.80%	9
<i>Total</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>1109</i>
Estimated value of owned assets						
0 to 3M	57.20%	56.80%	63.70%	70.80%	62.10%	689
3 to 10m	22.10%	24.40%	21.80%	16.10%	21.10%	234
10 to 30m	11.20%	11.30%	8.80%	8.40%	9.90%	110
More than 30m	9.50%	7.50%	5.60%	4.70%	6.90%	76
<i>Total</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>1109</i>
Highest registration level attained						
None	31.70%	25.90%	27.50%	25.20%	27.60%	306
Sector	26.40%	21.10%	19.70%	20.80%	22.00%	244
District	16.20%	19.90%	18.70%	17.50%	18.10%	200
RCA	25.70%	33.10%	34.20%	36.50%	32.30%	358
<i>Total</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>1108</i>
Organization industry certified						
No	96.80%	97.70%	97.90%	97.10%	97.40%	1080
Yes	3.20%	2.30%	2.10%	2.90%	2.60%	29
<i>Total</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>1109</i>
Organization has paid managerial staff						
No	91.90%	92.50%	93.70%	97.10%	93.80%	1040
Yes	8.10%	7.50%	6.30%	2.90%	6.20%	69
<i>Total</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>100.00%</i>	<i>1109</i>

Table 14. Location of Land on Hillside by Selected Categories of Land Use

Location of Land on Hillside by Selected Categories of Land Use								
Location of Land on Hillside								
Land Use	Valley		Low hillside		High hillside		Total	
	%	(Ha)	%	(Ha)	%	(Ha)	%	(Ha)
Total area	44.1%	4,428	35.6%	3,576	20.3%	2,038	100%	10,042
Production area	37.1%	2,648	28.6%	2,040	34.3%	2,448	100%	7,135
Fruit area	5.6%	168	64.8%	1,945	29.6%	887	100%	3,001
Vegetable area	78.5%	2,008	11.9%	303	9.7%	247	100%	2,559
Flower area	88.5%	68	9.9%	8	1.6%	1	100%	77
Irrigated area	83.0%	1,457	9.9%	174	7.2%	126	100%	1,756
Org Own area	39.8%	320	17.2%	139	43.0%	346	100%	806
Indiv owned area	18.6%	852	70.3%	3,227	11.1%	510	100%	4,589
Comm owned area	73.4%	2,010	13.3%	366	13.3%	364	100%	2,740
Privately owned area	40.9%	293	24.1%	173	35.0%	252	100%	718
Other owned area	61.8%	117	15.4%	29	22.7%	43	100%	189
Purchased area	27.2%	423	46.3%	719	26.5%	412	100%	1,554
Gift area	10.2%	208	82.9%	1,696	6.9%	142	100%	2,045
No cost leased area	75.9%	2,404	11.7%	370	12.4%	392	100%	3,166
Cost lease area	57.1%	978	21.5%	368	21.5%	368	100%	1,713

Table 15. Production Area (Ha) by Location on the Hillside and Province

Production Area (Ha) by Location on the Hillside and Province									
Localization of land on hillside									
Province	Valley		Low hillside		High hillside		Total		
	Sum (Ha)	% (Ha)	Sum (Ha)	% (Ha)	Sum (Ha)	% (Ha)	Sum (Ha)	% (Ha)	
Kigali	328	90.7%	12	3.2%	22	6.1%	362	100.0%	
South	719	65.4%	215	19.6%	166	15.1%	1,100	100.0%	
West	460	40.9%	317	28.2%	348	30.9%	1,124	100.0%	
North	187	33.9%	167	30.3%	197	35.8%	551	100.0%	
East	954	23.9%	1,330	33.2%	1,715	42.9%	3,999	100.0%	
Rwanda	2,648	37.1%	2,040	28.6%	2,448	34.3%	7,135	100.0%	

Table 16. Sources of Information Received by Organisations by Type of Information

Sources of Information Received by Organisations by Type of Information												
Type of Information												
Primary & Secondary sources of information (combined)	Total (all types) (%)	Improved production practices (%)	Price of inputs (%)	Post-Harvest practices (%)	Improved processing practices (%)	Transport costs (%)	Markets for crops/products (%)	Market requirements (%)	Market prices (%)	Certification (e.g., organic, Fair Trade) (%)	Improved management practices (%)	Improved business practices (%)
Total All Sources	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Total Tech Sources	18.4%	28.5%	25.2%	12.8%	20.4%	10.8%	16.7%	15.8%	20.7%	23.8%	10.2%	12.9%
Radio	11.6%	22.6%	18.8%	9.2%	13.7%	4.9%	6.9%	6.8%	9.6%	17.7%	7.9%	7.9%
Television	0.6%	1.0%	0.7%	0.6%	2.0%	0.2%	0.4%	0.5%	0.3%	1.8%	0.2%	0.5%
Internet	0.6%	0.7%	0.3%	0.9%	1.7%	0.2%	0.6%	0.5%	0.5%	2.3%	0.4%	0.5%
Mobile phone	5.5%	4.2%	5.4%	2.0%	2.9%	5.5%	8.8%	8.0%	10.3%	2.0%	1.7%	4.0%
Total Pers-to-Pers Sources	79.7%	68.3%	73.2%	85.6%	75.4%	88.9%	82.2%	82.8%	78.5%	71.4%	86.7%	85.0%
Org. members	23.3%	16.4%	12.8%	34.2%	23.5%	35.4%	25.5%	22.0%	22.4%	14.9%	29.7%	25.0%
Friends/family	6.8%	4.4%	5.2%	7.5%	8.0%	11.2%	8.7%	6.8%	8.5%	2.8%	5.3%	5.6%
Other producers	19.2%	13.2%	14.8%	17.7%	15.2%	25.5%	25.1%	25.2%	23.8%	12.3%	16.2%	17.1%
Product sales agents	13.8%	1.4%	18.0%	4.4%	9.8%	13.8%	18.3%	21.0%	20.1%	4.5%	2.4%	28.6%
Extension agents	13.1%	25.8%	20.2%	18.0%	14.0%	2.1%	3.4%	6.3%	2.9%	29.0%	23.2%	6.4%
Project/NGO	3.6%	7.0%	2.1%	3.9%	5.0%	0.9%	1.2%	1.5%	0.9%	7.9%	9.9%	2.3%
Total Printed Sources	2.0%	3.2%	1.6%	1.6%	4.2%	0.3%	1.1%	1.4%	0.8%	4.8%	3.1%	2.1%
Extension publications	0.8%	1.7%	0.5%	0.8%	1.9%	0.2%	0.2%	0.3%	0.2%	2.2%	1.7%	0.3%
Commercial pubs	0.6%	0.7%	0.7%	0.7%	1.5%	0.1%	0.3%	0.4%	0.4%	1.5%	0.4%	0.6%
Newspapers	0.6%	0.7%	0.4%	0.1%	0.9%	0.1%	0.6%	0.8%	0.3%	1.2%	1.0%	1.2%
N	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155	1,155

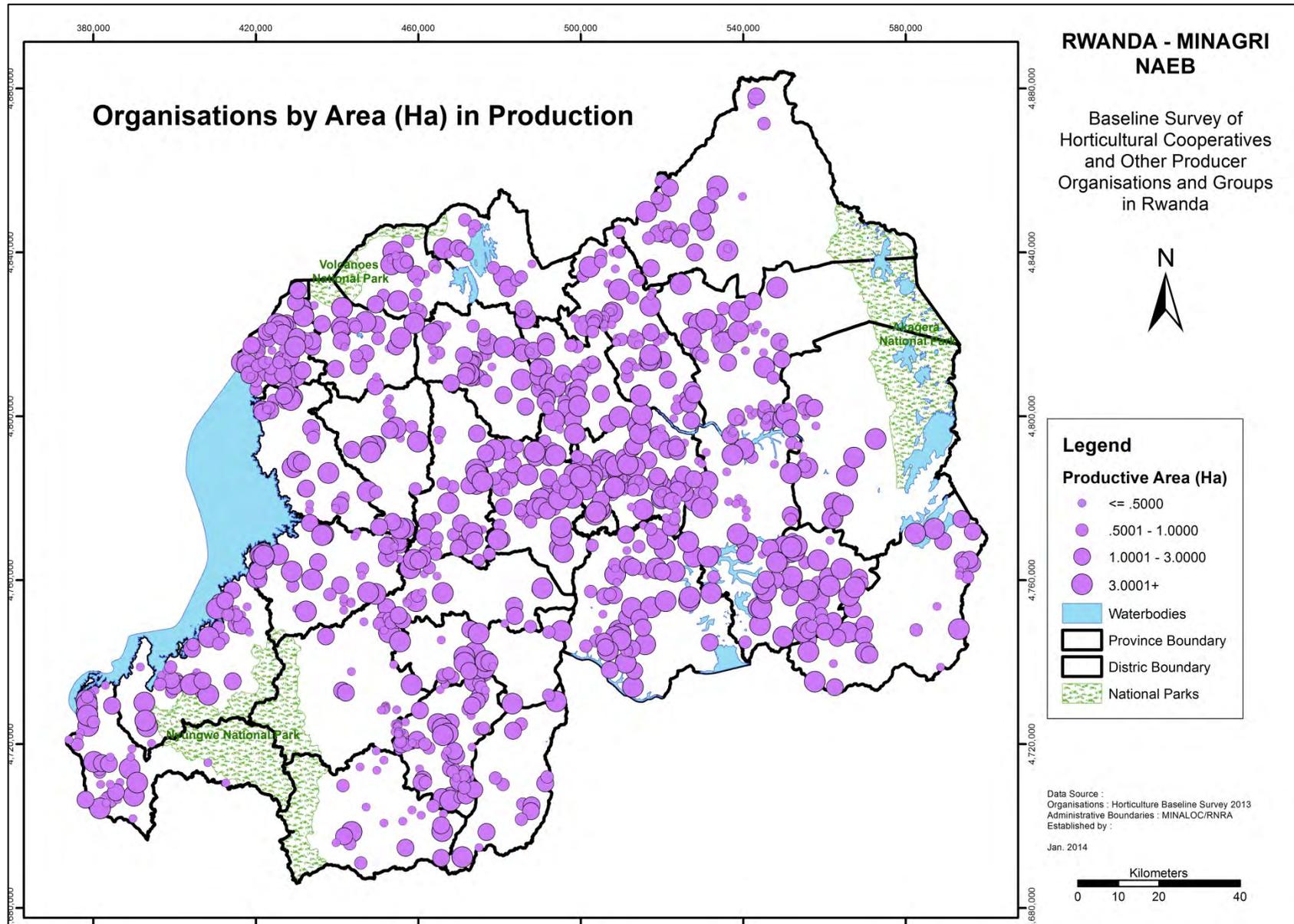
Table 17. Horticulture Crops Produced by Individual Largeholder Producers

Horticulture Crops Produced by Individual Largeholder Producers		
Crop	Crop N	Crop %
Total Hort Crops	974	100.0%
Total Fruits	296	30.4%
Avocado	19	2.0%
Banana (fruit)	10	1.0%
Lemon	3	0.3%
Mango	20	2.1%
Orange	23	2.4%
Papaya	3	0.3%
Passion fruit	31	3.2%
Pineapple	85	8.7%
Strawberry	2	0.2%
Tamarillos	83	8.5%
Other fruit	17	1.7%
Total Vegetables	663	68.1%
Cabbage	110	11.3%
Carrot	56	5.7%
Eggplant (local)	82	8.4%
French beans	13	1.3%
Leek	3	0.3%
Mushrooms	5	0.5%
Onion	55	5.6%
Pepper	38	3.9%
Sweet pepper	39	4.0%
Tomato	209	21.5%
Other vegetable	53	5.4%
Total Herbs & Spices	4	0.4%
Garlic	1	0.1%
Parsley	3	0.3%
Total Nuts	4	0.4%
Other nut	4	0.4%
Total Cut Flowers	7	0.7%
Aromas	2	0.2%
Roses	1	0.1%
Other cut flower	4	0.4%

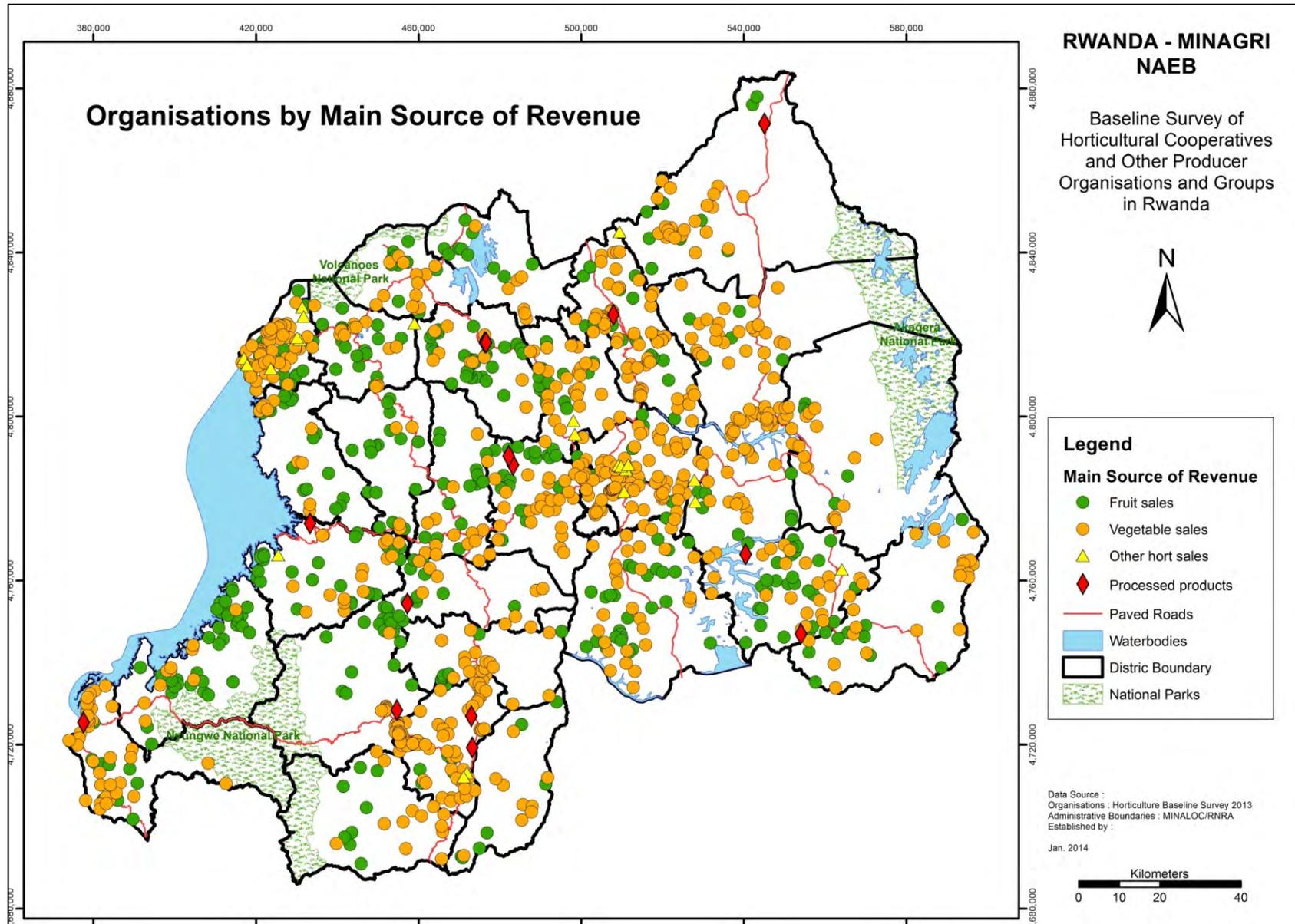
Table 18. Value (FRW) and Area (Ha) in Horticulture by Individual Largeholder Producers (Shown by Province and District)

Value (FRW) and Area (Ha) in Horticulture by Individual Largeholder Producers (Shown by Province and District)					
Province & District	N	Horticulture Sales (FRW)		Area in Horticulture (Ha)	
		FRW	%	Ha	%
RWANDA TOTAL	550	527,525,142	100.0%	712	100.0%
Kigali Province	39	85,114,200	16.1%	38	5.3%
Gasabo	25	44,306,200	8.4%	20	2.8%
Kicukiro	14	40,808,000	7.7%	18	2.5%
Nyarugenge	0		0.0%		0.0%
South Province	112	87,343,942	16.6%	142	19.9%
Gisagara	16	26,705,942	5.1%	24	3.4%
Huye	2	3,261,600	0.6%	3	0.4%
Kamonyi	26	13,852,500	2.6%	30	4.3%
Muhanga	19	10,385,000	2.0%	22	3.1%
Nyamagabe	11	1,510,000	0.3%	17	2.4%
Nyanza	27	27,026,000	5.1%	30	4.2%
Nyaruguru	3	842,900	0.2%	5	0.7%
Ruhango	8	3,760,000	0.7%	10	1.3%
West Province	64	64,199,200	12.2%	60	8.4%
Karongi	16	10,119,000	1.9%	18	2.5%
Ngororero	0		0.0%		0.0%
Nyabihu	6	12,300,000	2.3%	7	1.0%
Nyamasheke	19	16,219,000	3.1%	16	2.2%
Rubavu	1	258,000	0.0%	1	0.1%
Rusizi	14	22,872,000	4.3%	12	1.6%
Rutsiro	8	2,431,200	0.5%	7	0.9%
North Province	47	40,198,000	7.6%	49	6.9%
Burera	10	6,580,000	1.2%	9	1.2%
Gakenke	7	6,903,000	1.3%	7	0.9%
Gicumbi	1	5,000,000	0.9%	14	2.0%
Musanze	15	18,274,000	3.5%	9	1.2%
Rulindo	14	3,441,000	0.7%	11	1.6%
East Province	288	250,669,800	47.5%	424	59.5%
Bugesera	21	22,220,000	4.2%	27	3.8%
Gatsibo	52	61,863,800	11.7%	82	11.5%
Kayonza	27	34,700,000	6.6%	25	3.5%
Kirehe	74	40,121,000	7.6%	72	10.1%
Ngoma	19	11,895,000	2.3%	23	3.2%
Nyagatare	50	50,120,000	9.5%	152	21.3%
Rwamagana	45	29,750,000	5.6%	45	6.3%

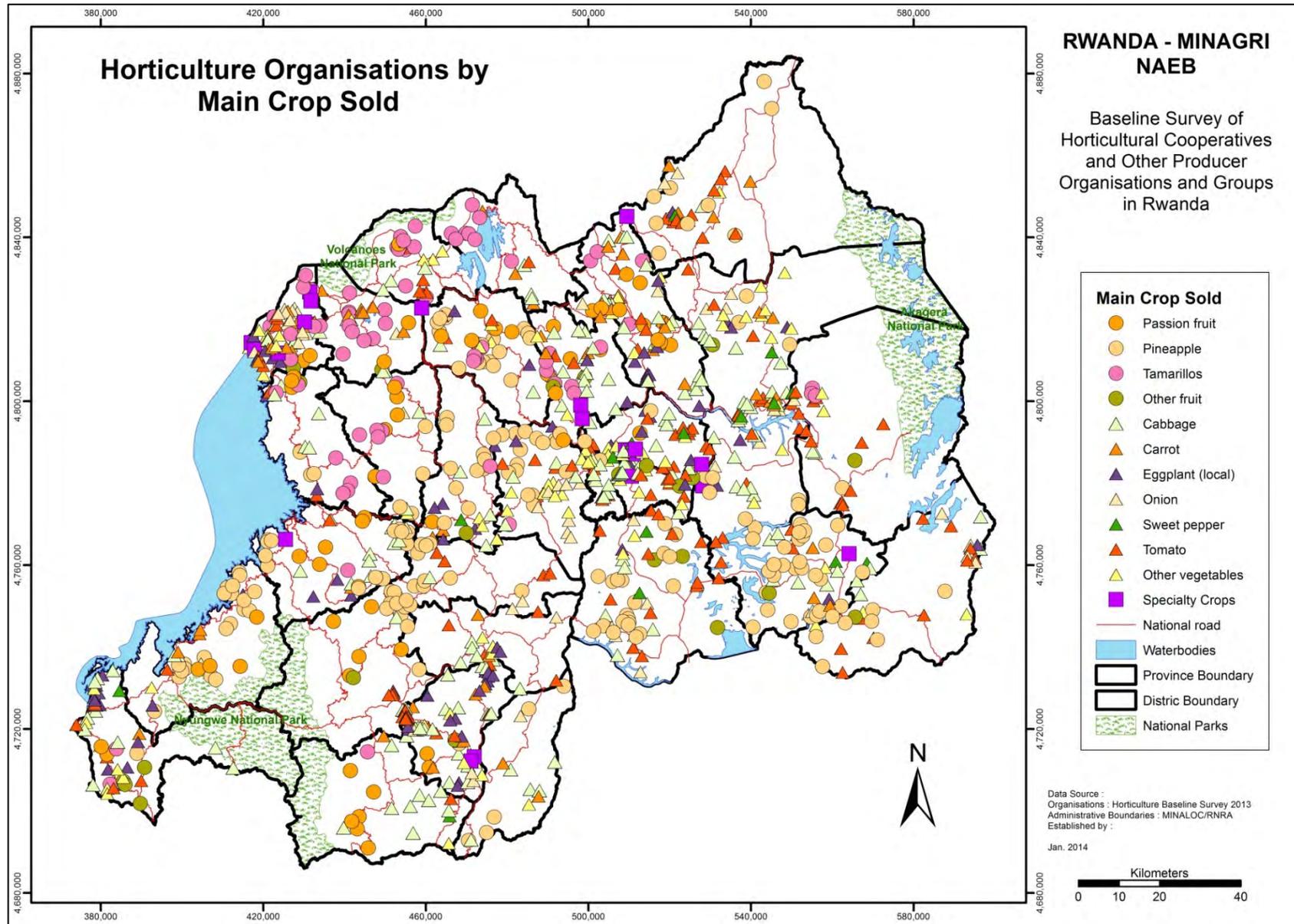
Map 1. Organisations by Area (Ha) in Production



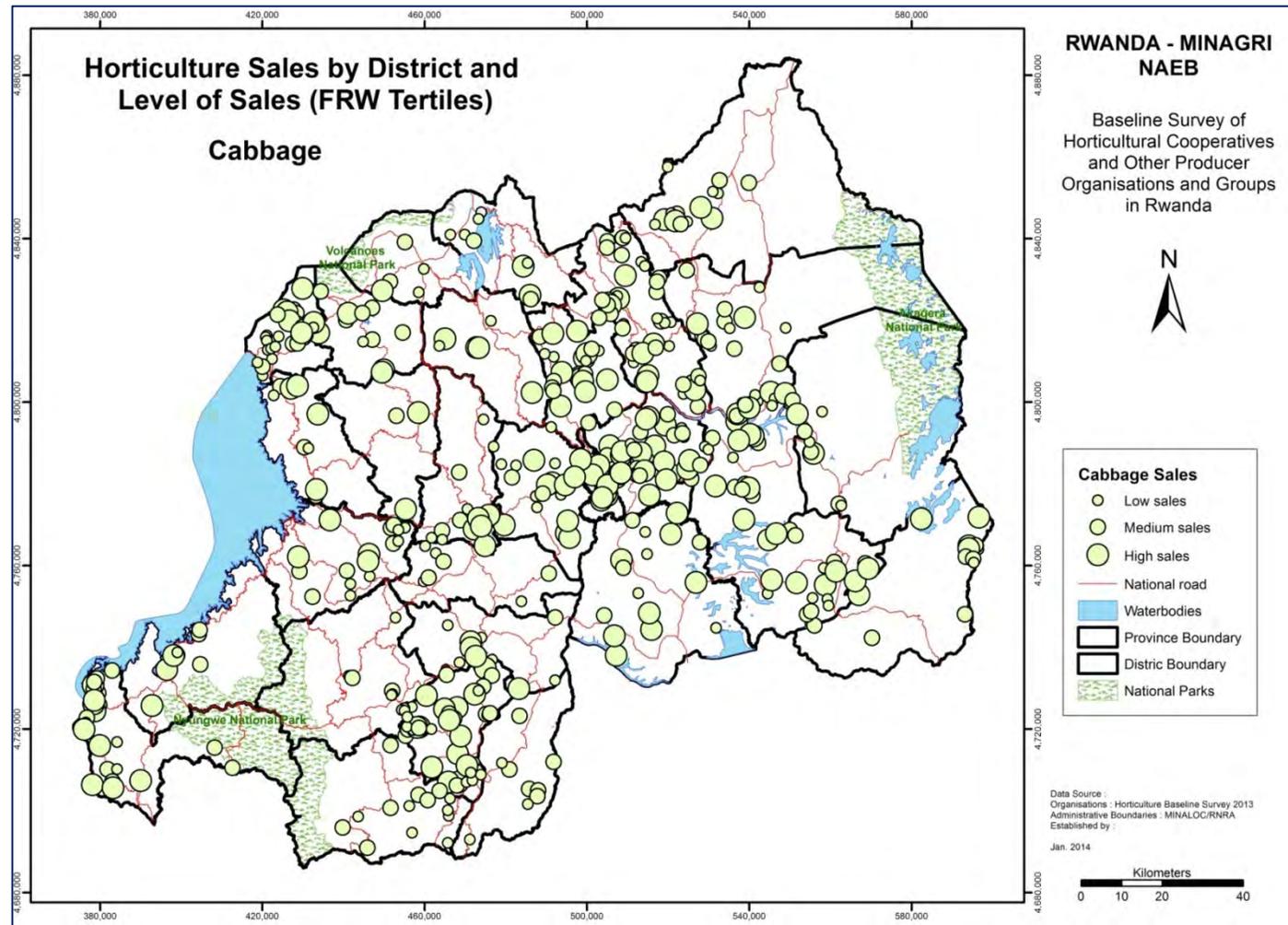
Map 2. Organisations by Main Source of Revenue and Level of Revenue



Map 3. Horticulture Organisations by Main Crop Sold

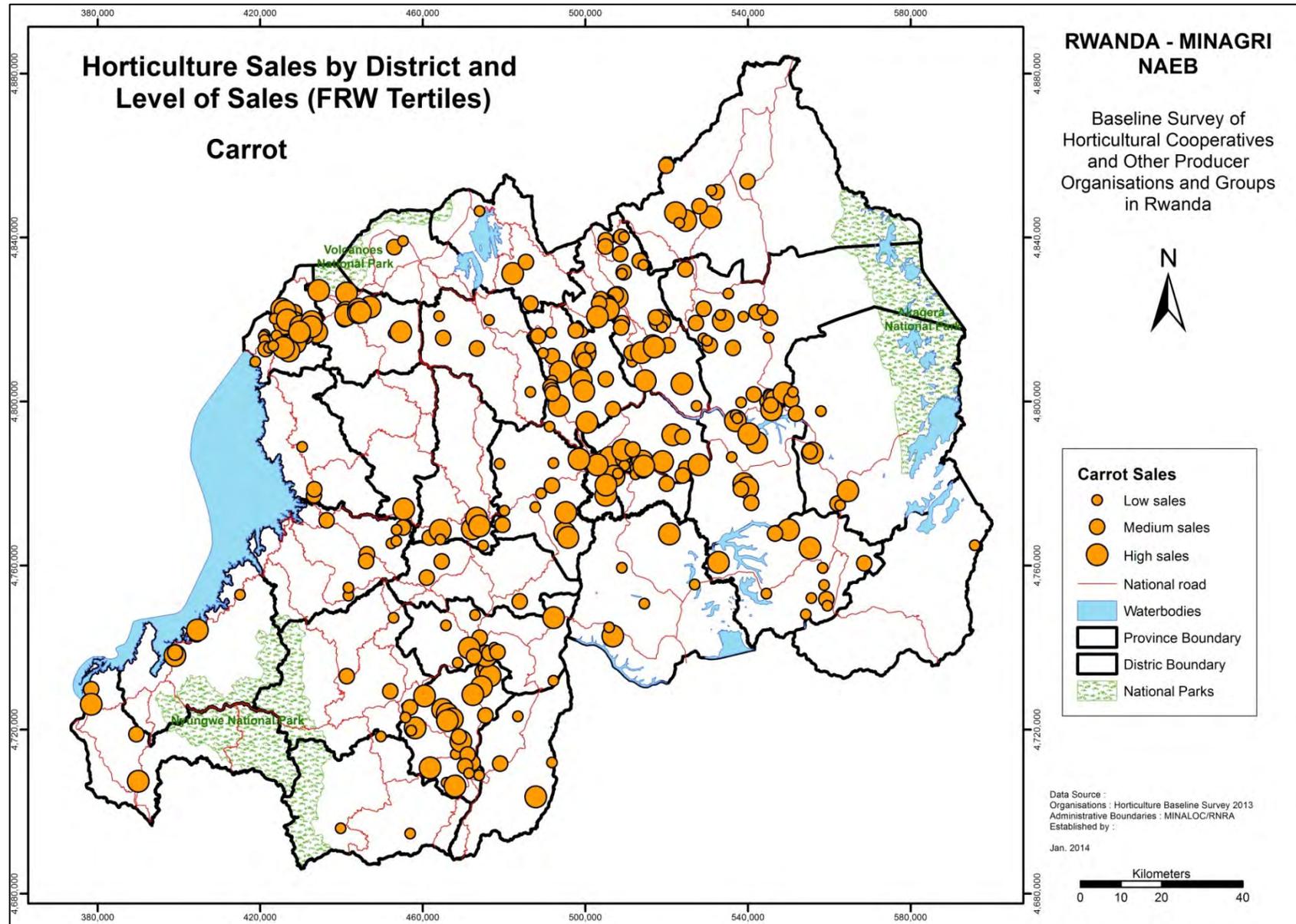


Map 4. Cabbage Sales by District and Level of Sales (FRW Tertiles)²

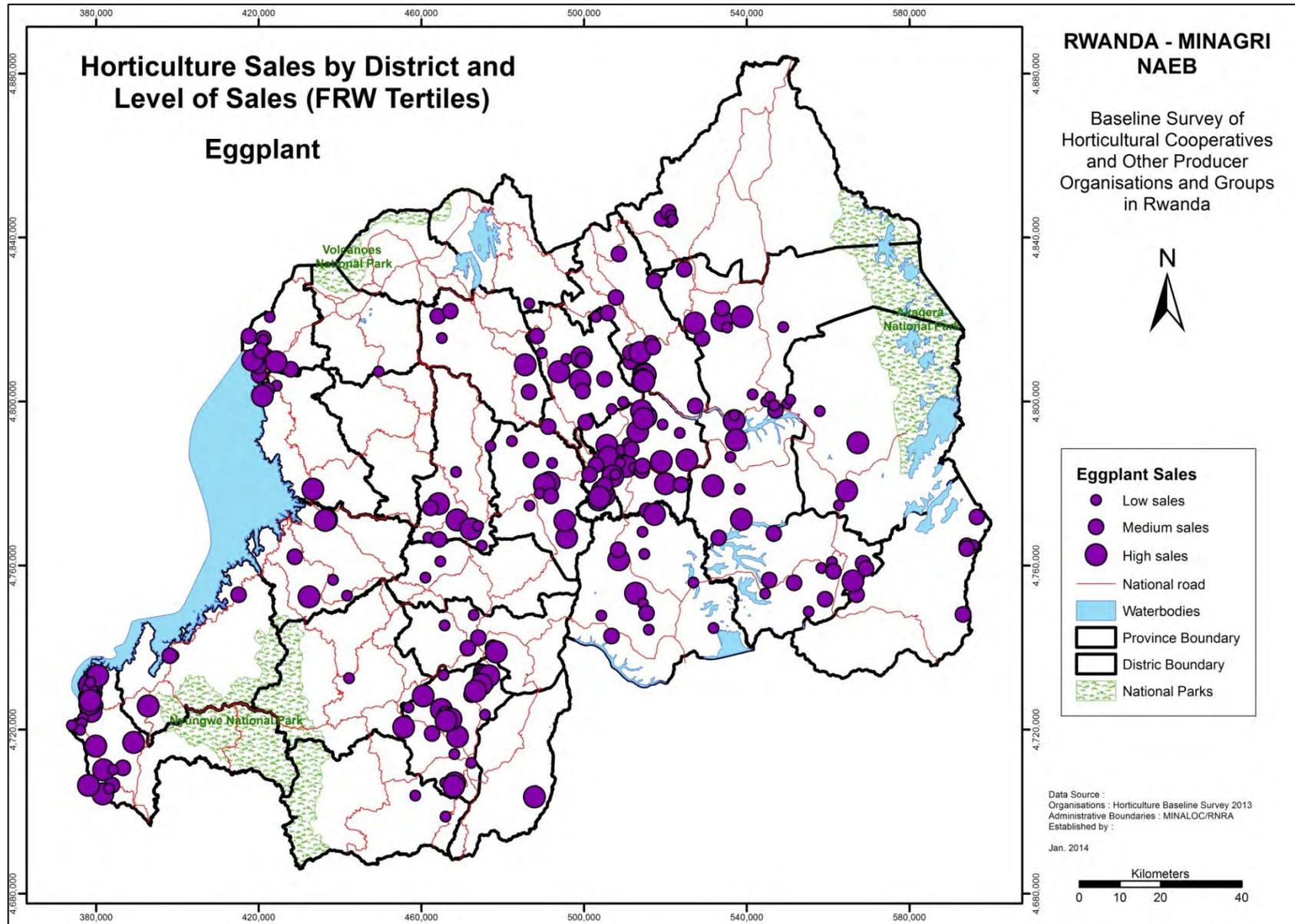


² Tertiles are computed as three equally-sized groups based on their levels of sales (FRW). They constitute a convenient method for grouping organisations by their degree of sales of a given crop. The 1st tertile is at the low end of the scale and contains the lowest third of organisations based on their sales of the crop. The 3rd tertile, by contrast, contains the highest third of organisations in terms of their sales of the crop.

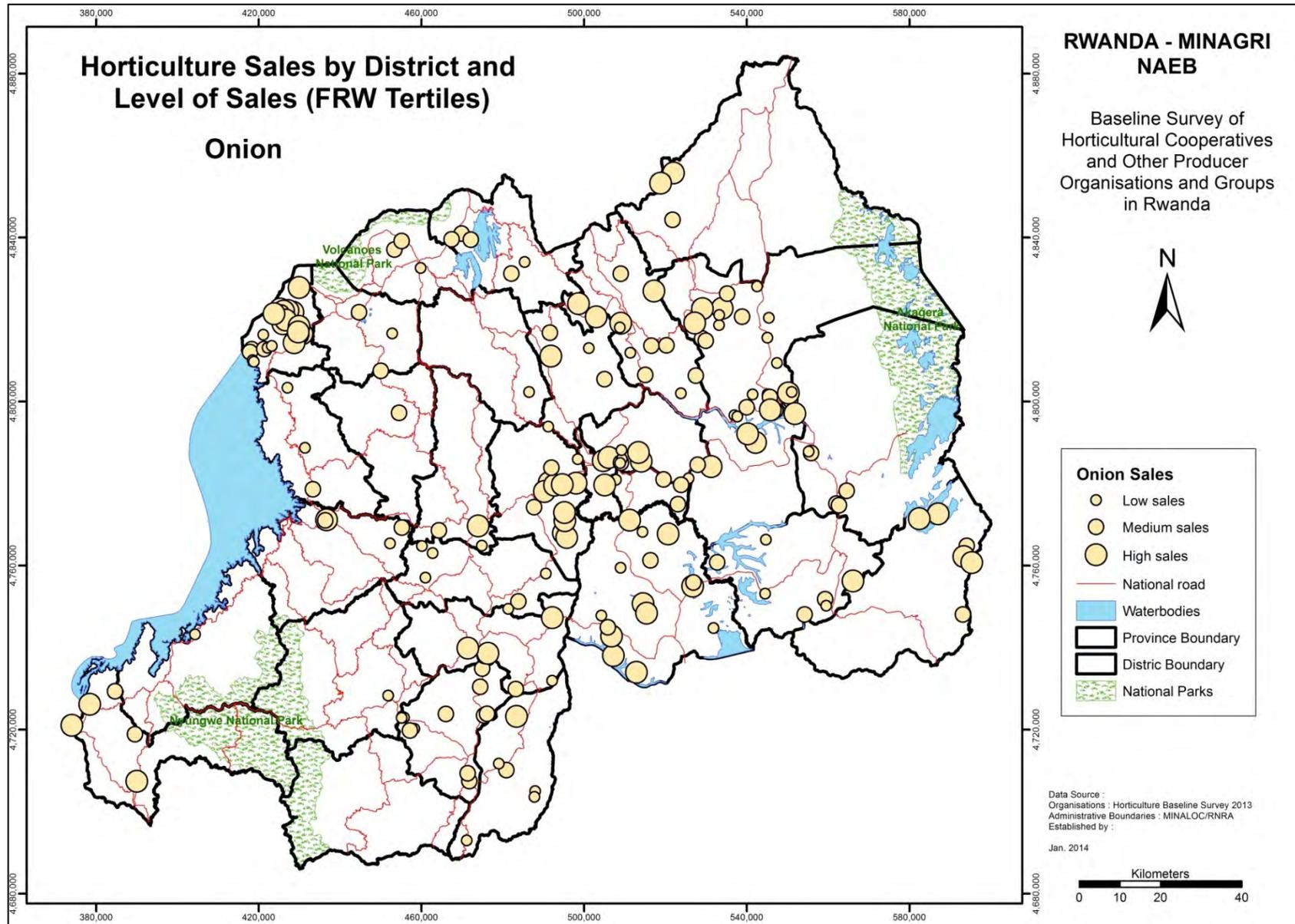
Map 5. Carrot Sales by District and Level of Sales (FRW Tertiles)



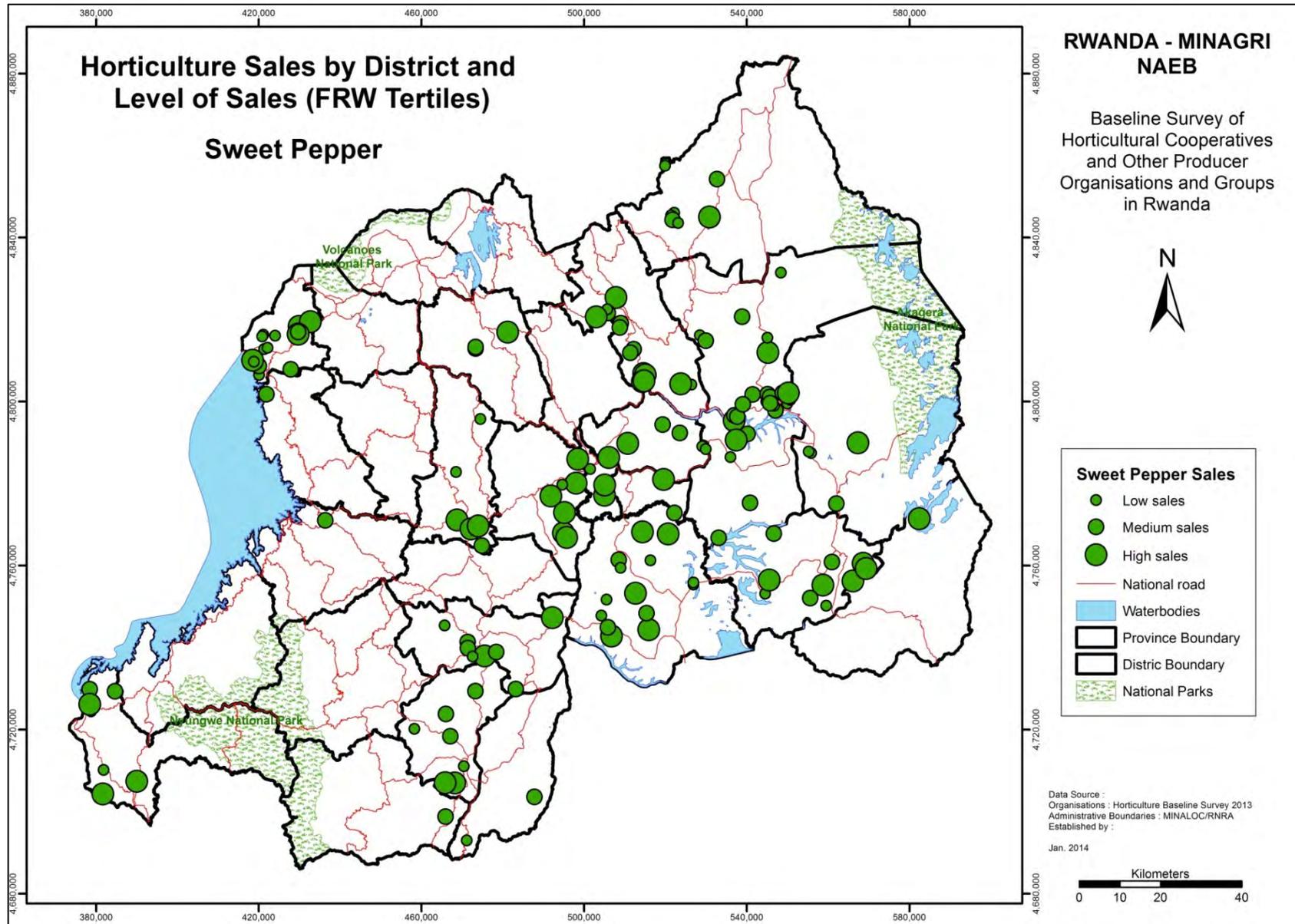
Map 6. Eggplant Sales by District and Level of Sales (FRW Tertiles)



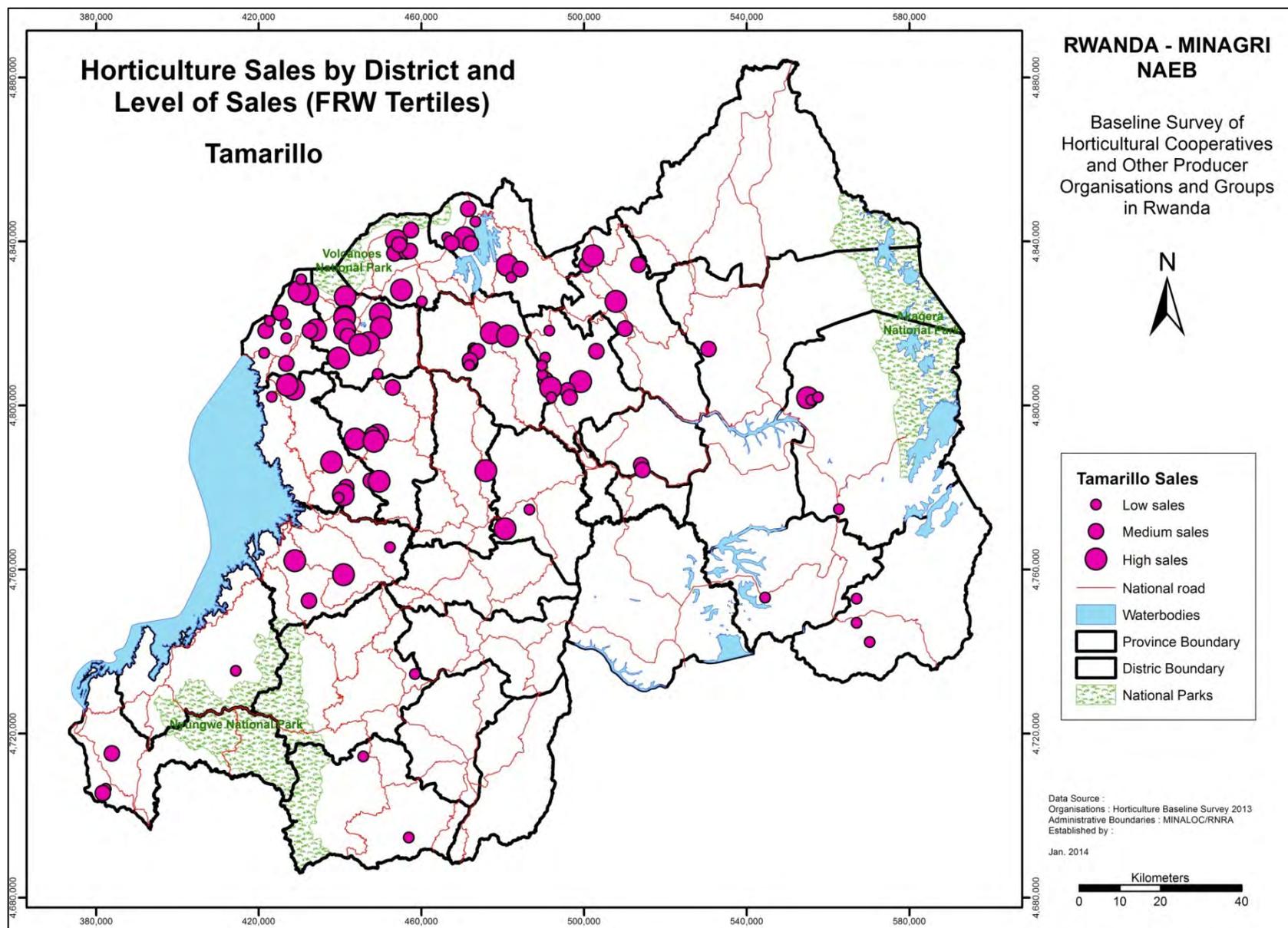
Map 7. Onion Sales by District and Level of Sales (FRW Tertiles)



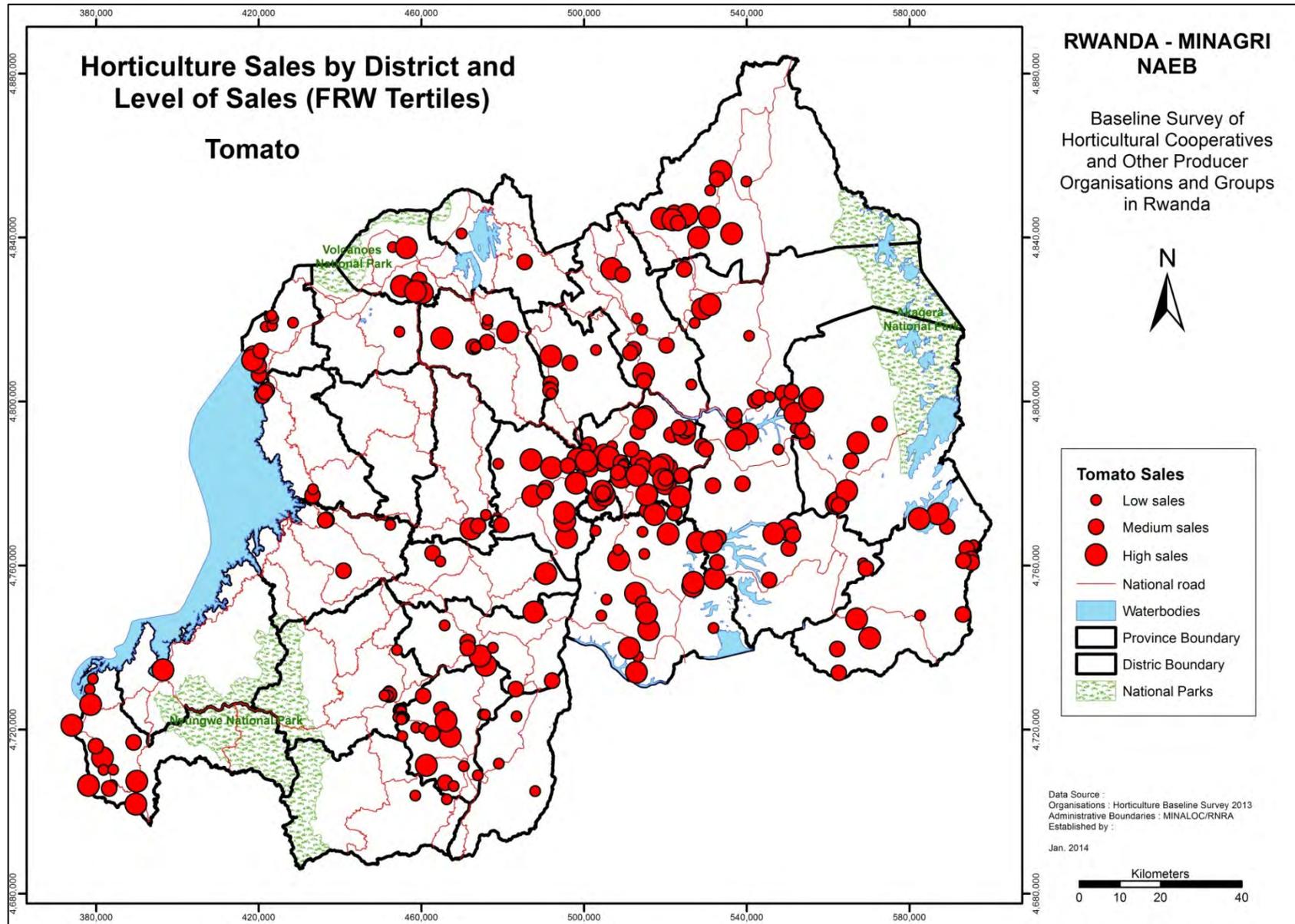
Map 8. Sweet Pepper Sales by District and Level of Sales (FRW Tertiles)



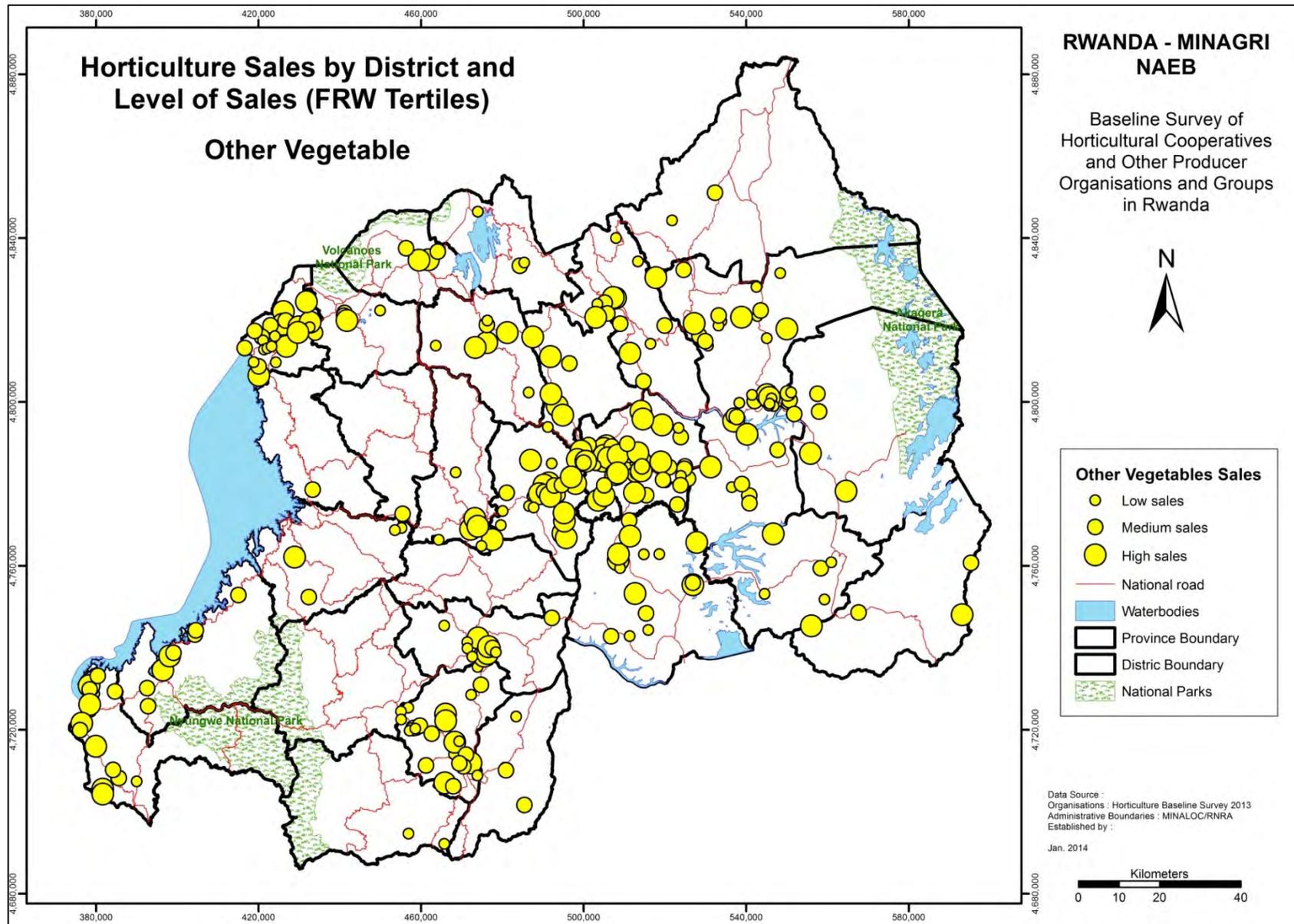
Map 9. Tamarillo Sales by District and Level of Sales (FRW Tertiles)



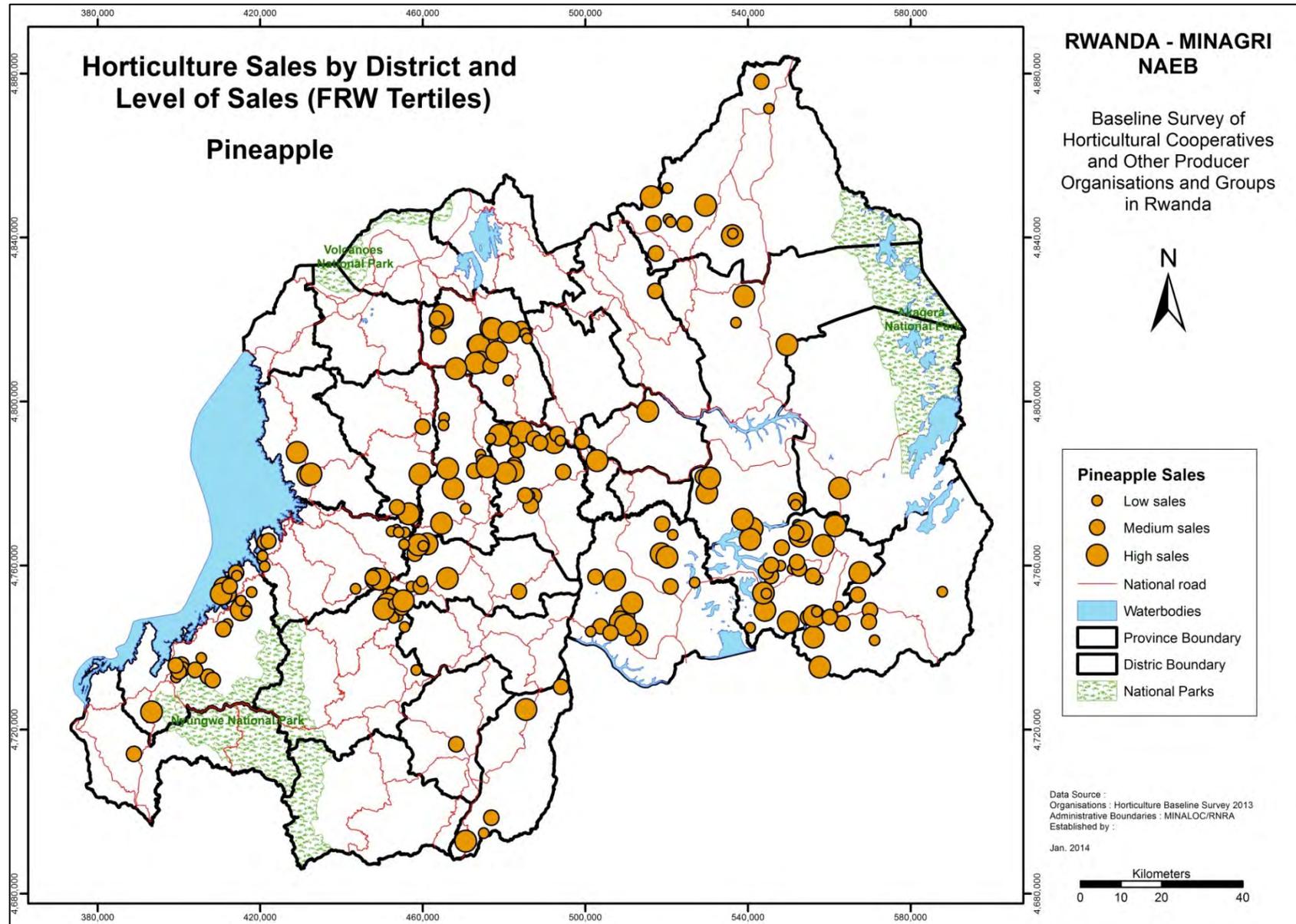
Map 10. Tomato Sales by District and Level of Sales (FRW Tertiles)



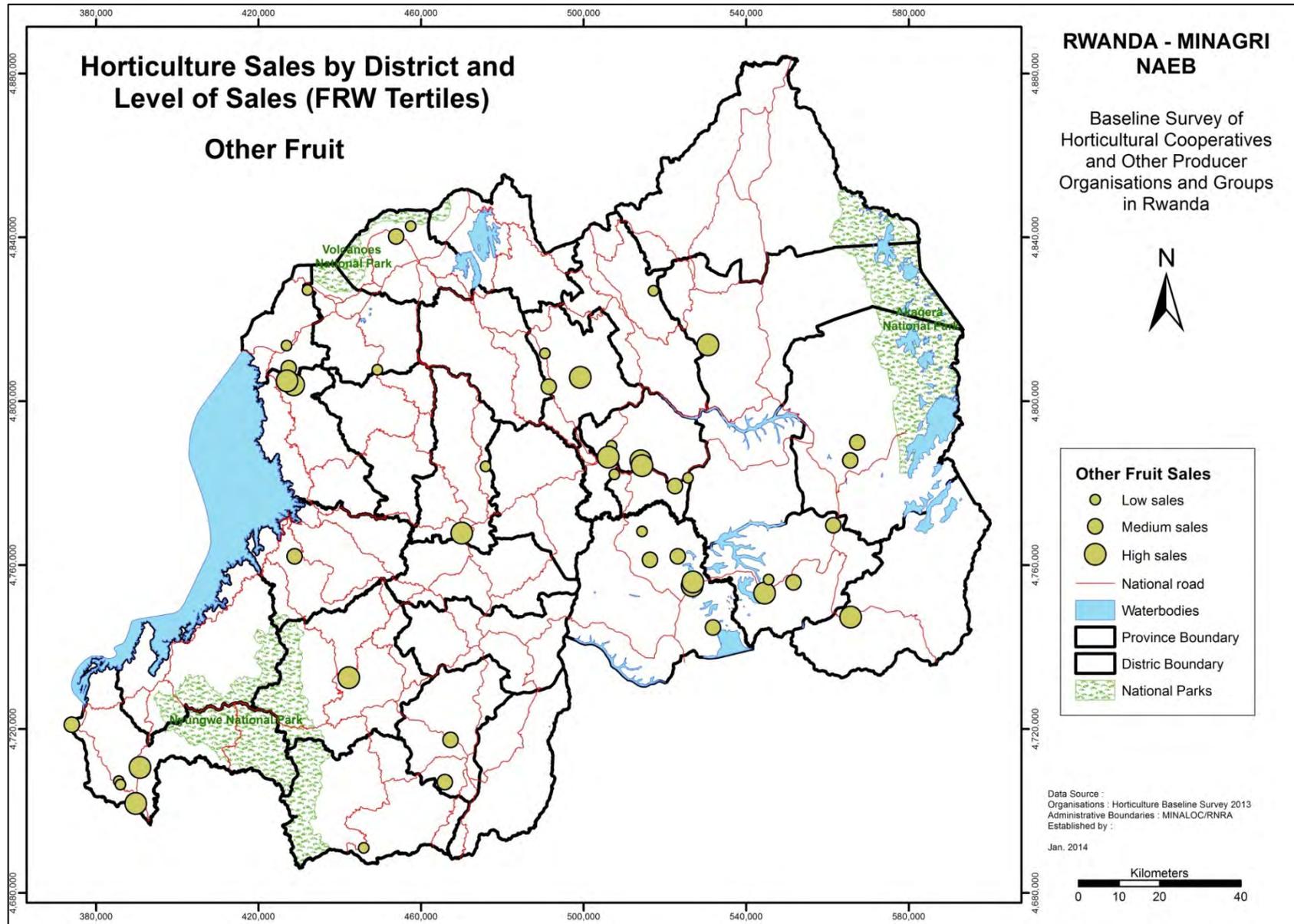
Map 11. Other Vegetable Sales by District and Level of Sales (FRW Tertiles)



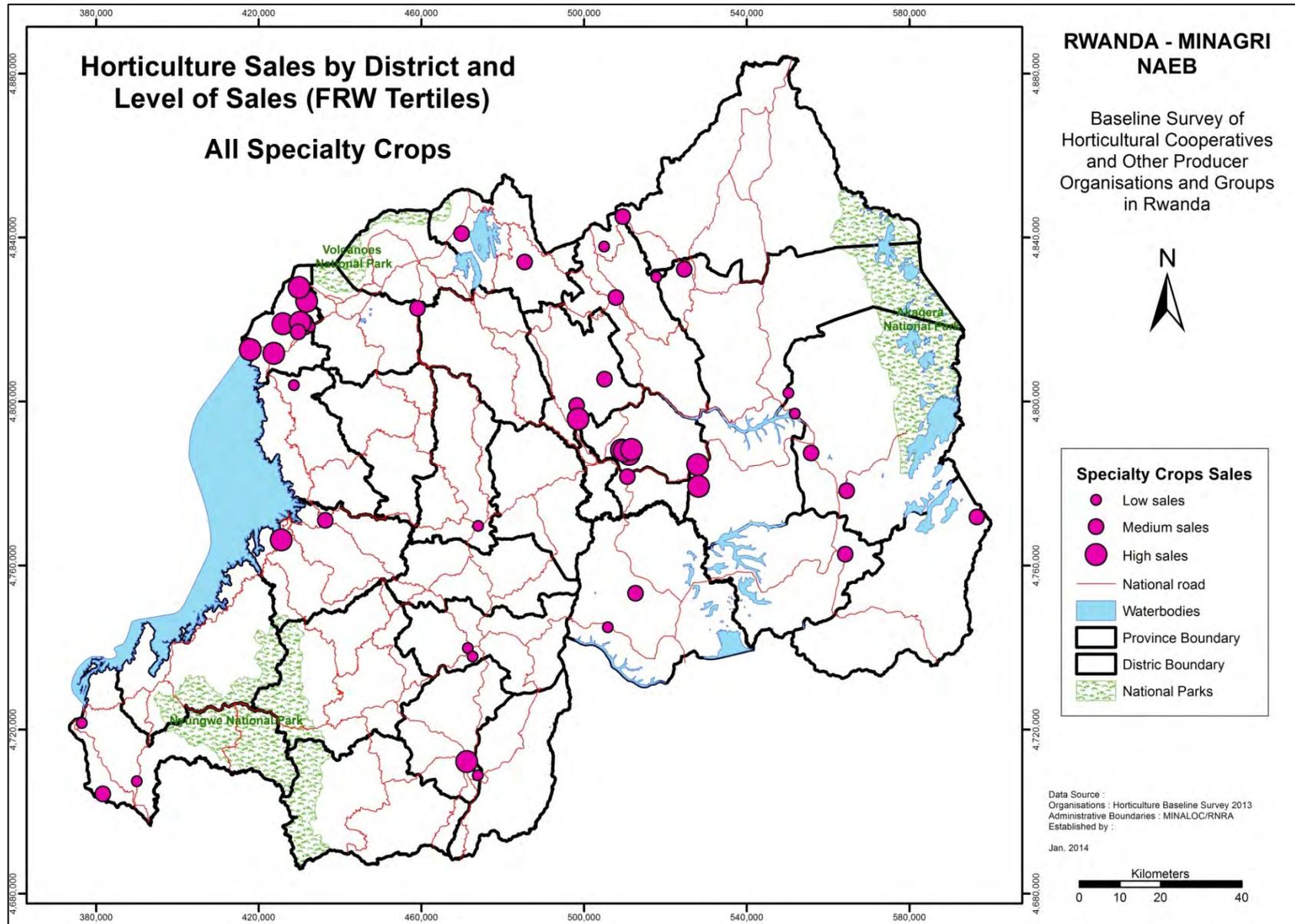
Map 13. Pineapple Sales by District and Level of Sales (FRW Tertiles)



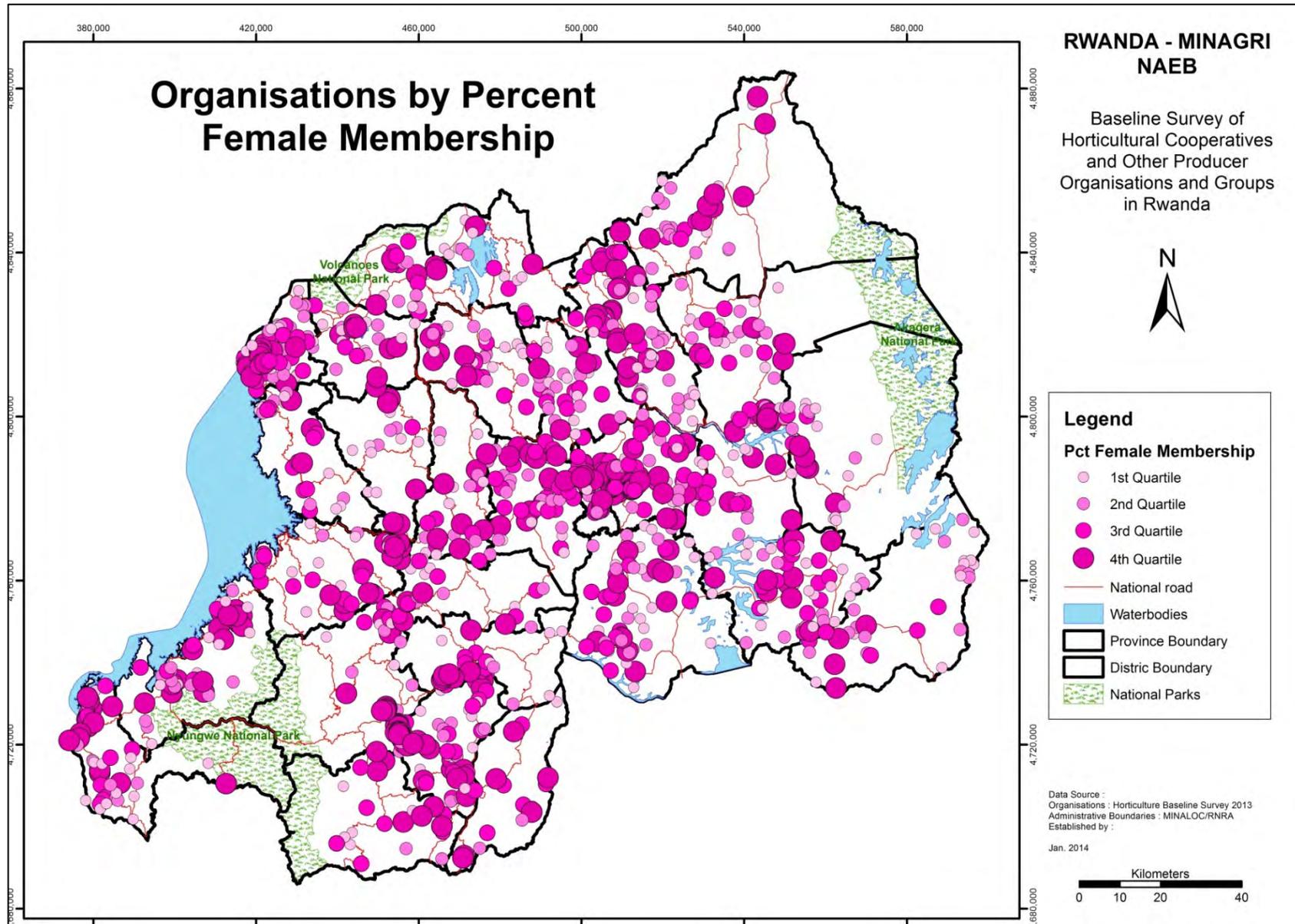
Map 14. Other Fruit Sales by District and Level of Sales (FRW Tertiles)



Map 15. Specialty Crops Sales by District and Level of Sales (FRW Tertiles)



Map 16. Organisations by Percent Female Membership (Quartiles)



Questionnaire

KeyID Number (Transcribe from page 1: Province Q1.1, District Q1.2, Org. Nbr Q1.12)

Horticulture Cooperatives / Associations / Companies Survey – 2013

Ministry of Agriculture and Animal Resources (MINAGRI) / National Agricultural Export Board (NAEB) of Rwanda

INTERVIEWER: My name isand I'm part of a team from the MINAGRI in collaboration with the National Agricultural Export Board of Rwanda (NAEB). We are carrying out national survey of horticulture organisations in Rwanda. The results of the survey will enable the Government of Rwanda to plan for the country's horticulture sector development and growth. You can be assured that the information provided is for statistical purposes and will remain confidential and will not be disclosed for any reason whatsoever. May we proceed?

NOTE: The term "horticultural organisations" will be used in this survey to refer to the cooperatives, associations, and private sector companies completing the survey.

Section 1. Identification of the Organisation

Q1.1 Province <i>(circle code)</i>	1 - Kigali	2 - South	3 - West	4 - North	5 - East	Q1.11 Name of organisation: _____	Q1.12 Organisation Number <i>(Assign sequential number starting with 001)</i> _____
Q1.2 District <i>(circle code)</i>	1 - Gasabo 2 - Kicukiro 3 - Nyarugenge	1 - Gisagara 2 - Huye 3 - Kamonyi 4 - Muhanga 5 - Nyamagabe 6 - Nyanza 7 - Nyaruguru 8 - Ruhango	1 - Karongi 2 - Ngororero 3 - Nyabihu 4 - Nyamasheke 5 - Rubavu 6 - Rusizi 7 - Rutsiro	1 - Burera 2 - Gakenke 3 - Gicumbi 4 - Musanze 5 - Rulindo	1 - Bugesera 2 - Gatsibo 3 - Kayonza 4 - Kirehe 5 - Ngoma 6 - Nyagatare 7 - Rwamagana	Q1.13 Is horticulture production, processing or marketing <u>one of the primary</u> activities of the organization? 0 - No <i>(End survey here)</i> 1 - Yes <i>(Continue)</i>	
Q1.3 Sector	_____	_____	_____	_____	_____	Q1.14 GPS -- Geo-coordinates of organization <i>(local operational headquarters)</i> <i>Record in decimal degree format (DD.DDDDDD)</i> Latitude: - . Longitude: .	
Q1.4 Cellule	_____	_____	_____	_____	_____	Q1.15 Name and contacts of respondent <i>(for follow up):</i> A. Name: _____ B. Position: _____ C. Telephone: _____ D. Email: _____	
Q1.5 Village	_____	_____	_____	_____	_____		
Q1.6 Interviewer name: _____	Q1.7 Date of interview <i>(DDMMYY)</i> 		Q1.8 Time of interv. <i>hh:mm</i> A. Start : B. Finish :				
Q1.9 Supervisor name: _____	Q1.10 Date of verification <i>(DDMMYY)</i> 						

Section 2. Organizational Characteristics

<p>Q2.1 What type of organisation is this?</p> <ul style="list-style-type: none"> 1 - Cooperative (registered) 2 - Association (registered) 3 - Association (<u>not</u> registered) 4 - Private Company 5 - Individual largeholder producer 6 - Other (<i>Specify</i>) _____ 	<p>Q2.6 How many paid full-time and part-time employees have you employed over the past 12 months?</p> <p style="text-align: center;"><i>(For part-time employees, also record their total person-days over past 12 mos)</i></p> <p>A. Full time (on salary)? <u> </u><u> </u><u> </u><u> </u></p> <p>B. Part time? <u> </u><u> </u><u> </u><u> </u> <i>(If "0", skip to Q2.7)</i></p> <p style="text-align: center;">↘</p> <p>C. Total person-days over past 12 mos? <u> </u><u> </u><u> </u><u> </u></p>		
<p>Q2.2 What is the highest level at which your organisation is registered? <i>(Circle code)</i></p> <ul style="list-style-type: none"> 1 - None 2 - Sector 3 - District 4 - RCA 	<p>Q2.7 How has the number of members changed... (circle code)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>A. ... over the past 3 years?</p> <ul style="list-style-type: none"> 1 - Grown 2 - Declined 3 - Stayed about the same 4 - DK or NA </td> <td style="width: 50%; vertical-align: top;"> <p>B. Projected over the next 3 years?</p> <ul style="list-style-type: none"> 1 - Will grow 2 - Will decline 3 - Will stay about the same 4 - DK or NA </td> </tr> </table>	<p>A. ... over the past 3 years?</p> <ul style="list-style-type: none"> 1 - Grown 2 - Declined 3 - Stayed about the same 4 - DK or NA 	<p>B. Projected over the next 3 years?</p> <ul style="list-style-type: none"> 1 - Will grow 2 - Will decline 3 - Will stay about the same 4 - DK or NA
<p>A. ... over the past 3 years?</p> <ul style="list-style-type: none"> 1 - Grown 2 - Declined 3 - Stayed about the same 4 - DK or NA 	<p>B. Projected over the next 3 years?</p> <ul style="list-style-type: none"> 1 - Will grow 2 - Will decline 3 - Will stay about the same 4 - DK or NA 		
<p>Q2.3 A. In what year was the organisation established? <u> </u><u> </u><u> </u><u> </u></p> <p>B. In what year was the organisation officially registered? <u> </u><u> </u><u> </u><u> </u></p>	<p>Q2.8 What are the primary types of horticultural activities of the organisation... ? <i>(Check all that apply)</i></p> <ul style="list-style-type: none"> A. <input type="checkbox"/> Production <i>(cultivation of horticulture crops. NOTE: For cooperatives & associations, this applies only to crops grown on collectively operated land. Exclude crops grown on farmer-operated land)</i> B. <input type="checkbox"/> Post-Harvest handling <i>(packing, cold storage, transport, etc.)</i> C. <input type="checkbox"/> Processing <i>(juices, preserves, dried fruit, etc.)</i> D. <input type="checkbox"/> Marketing <i>(e.g., wholesale, retail, exports, etc.)</i> E. <input type="checkbox"/> Other <i>(specify)</i> _____ <p style="text-align: center;"><i>["Now we would like to ask you some questions about these horticultural activities"]</i></p>		
<p>Q2.4 With which bodies is the organisation affiliated/registered... (Circle codes)</p> <ul style="list-style-type: none"> A. Aff w/ Natl Confederation of Coops of Rwanda (NCCR)? 0 - No 1 - Yes B. Aff w/ Rwanda Hort Inter-professional Org (RHIO)? 0 - No 1 - Yes C. Reg w/ Rwanda Cooperative Agency (RCA)? 0 - No 1 - Yes D. Reg /w Rwanda Development Board (RDB)? 0 - No 1 - Yes E. Aff w/ Rwanda Private Sector Federation (RPSF)? 0 - No 1 - Yes 	<p>Q2.5 How many active members are there in the organisation... ?</p> <p>A. Total? <u> </u><u> </u><u> </u><u> </u> →</p> <p>B. Male? <u> </u><u> </u><u> </u><u> </u></p> <p>C. Female? <u> </u><u> </u><u> </u><u> </u></p> <p>D. What is the average number of person-days worked per member over the past 12 months? <u> </u><u> </u><u> </u><u> </u> <i>(avg. person-days)</i></p>		

Section 3. Horticulture Production, Post-Harvest Handling and Marketing

CROPS		PRODUCTION					POST HARVEST			SALES & MARKETING					
Q3.1 A & B		Q3.2	Q3.3	Q3.4	Q3.5	Q3.6	Q3.7	Q3.8	Q3.9	Q3.10	Q3.11	Q3.12	Q3.13	Q3.14	
What fruits, vegetables and other horticulture crops has your organisation harvested or handled over last 12 months? <i>(see crop codes below)</i>		Seed/plant material used? None.....0 Own/trad ...1 Improved...2 Both.....3 DK4	Fertiliser used? None.....0 Trad/Org1 Commercial ...2 Both.....3	Pesticides/ Fungicides used? None.....0 Org/IPM1 Commerc...2 Both.....3	Primary Irrigation used? None0 Drip1 Sprinkler...2 By hand....3 Other.....4	What quantity have you <u>harvested</u> over the last 12 months? <i>All harvest measured in Kgs</i>	Did you provide grading & sorting to meet market requirements? No 0 Yes .. 1	Did you provide specialized packaging? None 0 Boxes..... 1 Sacks..... 2 Crates 3 Other..... 4	Did you provide cold storage? No0 Yes.....1	What quantity have you <u>sold</u> over the course of the last 12 months?	What was the <u>total</u> amount you received from the sale?	<i>If coop or assoc...</i> What was the estimated amount received <u>per participating member</u> ?	What was the principal outlet/market for this sale? Wholesale trader.. 1 Retail trader..... 2 Cooperative 3 Processor. 4 Supermarket. 5 International Co.... 6 Other 7	Was this crop grown on contract order? No 0 Yes ... 1 Both.. 2	
Name of crops	Code	Code	Code	Code	Code	Kg	Code	Code	Code	Kg	RWF	RWF	Code	Code	
Fruits	8 - Orange	Vegetables	26 - Mushrooms	Herbs & Spices	40 - Garlic	Nuts	50 - Macadamia	Cut Flowers	60 - Aromas	Flowers/herbs for processing	80 - Eucalyptus	81 - Geranium Lemon grass	82 - Patchouli	83 - Pyrethrum	89 - Other processing flowers
1 - Apple	9 - Papaya	20 - Bird's eye chilies	27 - Onion	41 - Ginger	59 - Other nut	61 - Calla lilies	62 - Carnations	63 - Chrysanthemum	64 - Gladiolus	65 - Pastels	66 - Roses	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
2 - Avocado	10 - Passion fruit	21 - Cabbage	28 - Pepper	42 - Parsley		64 - Gladiolus	65 - Pastels	66 - Roses	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
3 - Banana (fruit)	11 - Pineapple	22 - Carrot	29 - Sweet pepper	43 - Spicy grass		65 - Pastels	66 - Roses	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
4 - Cape Gooseberry	12 - Strawberry	23 - Eggplant (local)	30 - Tomato	44 - Other H&S		66 - Roses	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
5 - Japanese plum	13 - Tamarillos	24 - French beans	31 - Other vegetable			67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
6 - Lemon	14 - Other fruit	25 - Leek				67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)
7 - Mango						67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)	67 - Saint Joseph (Lys)

Section 5. Markets & Marketing

Q5.1 By percent, what have been the principal buyers for your crops/products over the past 12 months? (*record % to 100 sum*)

- A. Wholesale trader |_|_|_|_|%
- B. Retail trader |_|_|_|_|%
- C. Cooperative |_|_|_|_|%
- D. Processor |_|_|_|_|%
- E. Supermarket |_|_|_|_|%
- F. International company |_|_|_|_|%
- G. Other _____ |_|_|_|_|%
- (Specify)*
- TOTAL | 1 | 0 | 0 | 0 | %

Q5.2 By percent, what are the principle destination markets for your crops/products over the past 12 months? (*record % to 100 sum*)

- A. Own district |_|_|_|_|%
- B. Own province |_|_|_|_|%
- C. Other Provinces |_|_|_|_|%
- D. Kigali city |_|_|_|_|%
- E. Burundi |_|_|_|_|%
- F. Congo/DRC |_|_|_|_|%
- G. Tanzania |_|_|_|_|%
- H. Uganda |_|_|_|_|%
- I. Other Africa |_|_|_|_|%
- J. Middle East |_|_|_|_|%
- K. Europe |_|_|_|_|%
- L. Other _____ |_|_|_|_|%
- (Specify)*
- TOTAL | 1 | 0 | 0 | 0 | %

Q5.3 Are there preferred buyers that your organisation aspires to use more of in the next 3 years? (*Check all that apply*)

- A. No other markets of interest (*Skip to Q5.4*)
- B. Wholesale trader
- C. Retail trader
- D. Cooperative
- E. Processor
- F. Supermarket
- G. International company
- H. Other _____
- (specify)*

Q5.4 What are the principle destination markets your organization aspires to sell to in the next 3 years? (*Check all that apply*)

- A. Own district
- B. Own province
- C. Other Provinces
- D. Kigali city
- E. Burundi
- F. Congo/DRC
- G. Tanzania
- H. Uganda
- I. Other Africa
- J. Middle East
- K. Europe
- L. Other _____
- (Specify)*

Q5.5 What standards do your current buyers require of your organisation as a condition of sale?

(Check all that apply)

- A. Size of product
- B. Color of product
- C. Limited number of defects
- D. Taste of product
- E. Large volume requirements
- F. Packaging
- G. Labeling
- H. Food safety compliance
- I. Phytosanitary compliance
- J. Certification (organic, Fair Trade, etc.)

Q5.6 What standards will your future buyers require of your organisation as a condition of sale?

(Check all that apply)

- A. Size of product
- B. Color of product
- C. Limited number of defects
- D. Taste of product
- E. Large volume requirements
- F. Packaging
- G. Labeling
- H. Food safety compliance
- I. Phytosanitary compliance
- J. Certification (organic, Fair Trade, etc.)

Section 5. Markets & Marketing (continued)

Q5.7 What are the primary challenges your organisation faces in accessing these preferred markets in the next 3 years?

(Check 3 most important)

- A. Meeting price competitiveness of markets
- B. Distance from markets
- C. Meeting certification requirements
- D. Meeting high quality standards
- E. Meeting large volume requirements
- F. Infrastructure (roads, electricity, water, etc)
- G. Lack of packaging materials
- H. Lack of market information
- I. Other _____
(specify)

Q5.8 A. Are there new crops or products that your organisation plans to grow/produce in the next 3 years?

0 - No (Skip to Q5.9) 1 - Yes (list below)

(Write name and complete code from Code List on page 3)

Crop/product name	Crop/product Code
B. _____	_ _
C. _____	_ _
D. _____	_ _
E. _____	_ _
F. _____	_ _
(specify)	

Q5.9 What kinds of infrastructure improvements will be most important (3 max) to your success in expanding to meet these future markets.

(Check 3 most important)

- A. None
- B. Roads
- C. Electricity
- D. Water
- E. Internet
- F. Cold storage
- G. Other _____
(specify)

Q5.10 Who are your organisation's two most important competitors for your current buyers/markets?

(Check 2 most important)

- A. Other cooperatives (Rwanda)
- B. Independent traders (Rwanda)
- C. Individual farmers (Rwanda)
- D. Private companies (Rwanda)
- E. Traders/companies from other countries
- F. Other specify _____

Q5.11 From which other countries do you face the most competition for your crops/products?

(Check all that apply and record crop/product names and codes – 2 max from list)

	Most important Crops/Products	
	1 st Crop	2 nd Crop
A. <input type="checkbox"/> Burundi	1. _ _ _	2. _ _ _
Crop/product: _____		
B. <input type="checkbox"/> DRC Congo	1. _ _ _	2. _ _ _
Crop/product: _____		
C. <input type="checkbox"/> Kenya	1. _ _ _	2. _ _ _
Crop/product: _____		
D. <input type="checkbox"/> South Africa	1. _ _ _	2. _ _ _
Crop/product: _____		
E. <input type="checkbox"/> Tanzania	1. _ _ _	2. _ _ _
Crop/product: _____		
F. <input type="checkbox"/> Uganda	1. _ _ _	2. _ _ _
Crop/product: _____		
G. <input type="checkbox"/> Other	1. _ _ _	2. _ _ _
Crop/product: _____		

Section 6. Land Access for Horticulture Production & Processing

Categories of land operated by the organization for purposes of <u>horticulture</u> production and processing over the past 12 months	A & B. What is the area in m ² or in hectares? <i>Record area and circle unit code</i> <i>(Note: 10.000m² = 1 ha)</i>		C. What is the primary location of this land? Valley..... 1 Low hillside 2 High hillside 3	Q6.16 Would your organisation like to expand and operate more land in the next 3 years? <i>(Circle code)</i> 0 - No 1 - Yes <i>(Skip to Q6.17)</i>	Q6.19 What are the major competing uses of land in your area that restrict your expansion? <i>(Check all that apply)</i> A. <input type="checkbox"/> Other crops B. <input type="checkbox"/> Livestock/pasture C. <input type="checkbox"/> Protected lands (e.g., wetlands) D. <input type="checkbox"/> Other <i>(specify)</i> _____
	Area	Unit	Code		
Q6.1 Total land (owned or operated) by the		1 - m ² 2 - Ha.		Q6.17 If no, what is the primary reason for not expanding in the future? <i>(Circle code)</i> 1 - Not profitable 2 - No market 3 - No financing	Q6.20 A. Have crops promoted through the <u>regional crop specialisation</u> program restricted your access to more land? <i>(Circle code)</i> 0 - No <i>(skip to Q6.20)</i> 1 - Yes If yes, which crops? <i>(Check all that apply)</i> B. <input type="checkbox"/> Maize E. <input type="checkbox"/> Wheat C. <input type="checkbox"/> Rice F. <input type="checkbox"/> Cassava D. <input type="checkbox"/> Irish Potato G. <input type="checkbox"/> Beans/Soya
Q6.2 Land in production this year		1 - m ² 2 - Ha.			
Q6.3 Area under irrigation		1 - m ² 2 - Ha.			
Crop Categories?					
Q6.4 Land planted in fruits?		1 - m ² 2 - Ha.		Q6.18 If yes, is there land available in your area onto which you can expand your organisation's operations? <i>(Circle code)</i> 1 - No, none available 2 - Yes, land is available	Q6.21 A. Have crops promoted through the <u>land use consolidation</u> program restricted your access to more land? <i>(Circle code)</i> 0 - No <i>(skip to Q7.1)</i> 1 - Yes If yes, which crops? <i>(Check all that apply)</i> B. <input type="checkbox"/> Maize E. <input type="checkbox"/> Wheat C. <input type="checkbox"/> Rice F. <input type="checkbox"/> Cassava D. <input type="checkbox"/> Irish Potato G. <input type="checkbox"/> Beans/Soya
Q6.5 Land planted in vegetables?		1 - m ² 2 - Ha.			
Q6.6 Land planted in flowers?		1 - m ² 2 - Ha.			
Ownership?					
Q6.7 Organisation		1 - m ² 2 - Ha.		D. Estimate how many years remain on the lease agreement? ↓	E. What is the estimated lease payment for the past 12 months? ↓
Q6.8 Individual members		1 - m ² 2 - Ha.			
Q6.9 Community		1 - m ² 2 - Ha.			
Q6.10 Private owner (largeholder or company)		1 - m ² 2 - Ha.			
Q6.11 Other		1 - m ² 2 - Ha.			
How Acquired?					
Q6.12 Purchased		1 - m ² 2 - Ha.			
Q6.13 Gift		1 - m ² 2 - Ha.			
Q6.14 Leased (no cost)		1 - m ² 2 - Ha.			
Q6.15 Leased (at cost)		1 - m ² 2 - Ha.			

Section 7. Access to Inputs and Services

Inputs and Services	A. Is this input/service important to the success of your organization?	B. On a scale from 1-5 where... 1 = very low level, and 5 = very high level... What level of access do you have to this input/service?	C. What is the primary constraint to improving your access to this input/service? None..... 0 High cost 1 Lack local availability..... 2 Lack information 3 Low public investment... 4 Other (specify) 5
	Circle code	Circle code	Code
Q7.1 Seed	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.2 Organic fertilisers	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.3 Commercial fertilisers	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.4 Pesticides	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.5 Small production equipment (hoes, machetes, wheelbarrows, etc.)	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.6 Large production equipment (tractors, plows, etc.)	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.7 Irrigation equipment	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.8 Electricity	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.9 Sufficient water	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.10 Clean water	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.11 Green house materials and equipment	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.12 Certification services (organic, GlobalGap, Fair Trade, etc.)	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.13 Horticulture processing equipment	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.14 Dry storage facilities	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.15 Cold storage equipment/facilities	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.16 Packaging materials and equipment	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.17 Internet, computers and support services	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.18 Transportation	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.19 Paved/accessible roads	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.20 Current market information for horticulture crops/products	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.21 Exports promotion services	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.22 Exports certification services (SPS/food safety)	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□
Q7.23 Credit/financing	0 - No ↓ 1 - Yes →	1 2 3 4 5	□□

Section 8. Buildings & Equipment

Q8.1 Does your organization own or lease any buildings?

- No (Skip to Q8.2) Yes (complete below)

Approximately how many m²? (no decimal)

(Check all that apply)

- A. Office building(s)? |_|_|_|_|_|_|_|_| m²
- B. Warehouse(s)? |_|_|_|_|_|_|_|_| m²
- C. Collection center(s)? |_|_|_|_|_|_|_|_| m²
- D. Pack house(s)? |_|_|_|_|_|_|_|_| m²
- E. Cold storage unit(s)? |_|_|_|_|_|_|_|_| m²
- F. Other _____? |_|_|_|_|_|_|_|_| m²
(specify)

Q8.2

A. Does your organization own or lease any greenhouses?

0 - No (continue to Q8.3)

1 - Yes

B. Approximately how many m²? (no decimal)

|_|_|_|_|_|_|_|_| m²

C. Principal cover material used? (circle code)

1 - Glass

2 - Plastic film

3 - Corrugated sheets

D. Principal framing material used? (circle code)

1 - Metal

2 - Plastic

3 - Wood

Q8.3 Does your organisation use any irrigation systems/practices?

- No (Skip to Q8.4) Yes (complete all below)

- A. Drip
- B. Hand delivered (buckets, etc)

C. Ground water diversion dam/flood

D. Storage tanks, gravity fed

E. Mechanical (pumped)

F. Other (specify) _____

Q8.4 Does your organization own any motorized vehicles?

- No (Skip to Q8.4) Yes (complete all below)

- A. Moto bike? |_|_|_|
- B. Tractor? |_|_|_|

C. Refrigerated truck? |_|_|_|

D. Pickup / light truck |_|_|_|

E. Medium / heavy truck |_|_|_|

F. Other (specify) _____ |_|_|_|

Q8.5 Does your organization own any of the following equipment or implements?

(Check all that apply and record number)

Manual Tools? No (Skip) Yes

- A. Hoes |_|_|_|
- B. Spades/shovels |_|_|_|
- C. Pitch forks |_|_|_|
- D. Pruning Secateurs |_|_|_|
- E. Sprayers |_|_|_|
- F. Wheelbarrows |_|_|_|

Packing Equipment? No (Skip) Yes

- G. Receiving belt |_|_|_|
- H. Washer |_|_|_|
- I. Sorting table |_|_|_|

Processing Equipment? No (Skip) Yes

- J. Fruit press |_|_|_|
- K. Refractometer |_|_|_|
- L. Solar dryer |_|_|_|
- M. Air dehydrator |_|_|_|
- N. Canning machine |_|_|_|
- O. Cold containers |_|_|_|
- P. Refrigerators |_|_|_|
- Q. Freezers |_|_|_|
- R. Juice processing line |_|_|_|
- S. Juice bottling machine |_|_|_|
- T. Other (specify) _____ |_|_|_|

Section 9. Credit and Finances

Q9.1 A. Over the past 24 months has this organisation held or received any loans?

0 - No (Skip to 9.6) 1 - Yes → If yes, how many different loans? | | | |

In order of size of loan, please tell us about them... (3 maximum)

Q9.2 Loan 1

A. Original value of loan? | | | | . | | | | | 0 | 0 | 0 | FRW

B/C. Time remaining on loan? | | | | 1 - months 2 - years

D. Source of loan? (circle code)

1 - Bank 2 - Members 3 - NGO/project 4 - Other _____

E. Annual interest rate of loan: | | | | . | | | | %

Q9.3 Loan 2

A. Original value of loan? | | | | . | | | | | 0 | 0 | 0 | FRW

B/C. Time remaining on loan? | | | | 1 - months 2 - years

D. Source of loan? (circle code)

1 - Bank 2 - Members 3 - NGO/project 4 - Other _____

E. Annual interest rate of loan: | | | | . | | | | %

Q9.4 Loan 3

A. Original value of loan? | | | | . | | | | | 0 | 0 | 0 | FRW

B/C. Time remaining on loan? | | | | 1 - months 2 - years

D. Source of loan? (circle code)

1 - Bank 2 - Members 3 - NGO/project 4 - Other _____

E. Annual interest rate of loan: | | | | . | | | | %

Q9.5 Has your organisation missed a loan payment over the past 24 months?

0 - No 1 - Yes → If yes, how many times? | | | |

Q9.6 From the following categories, what is your organization's estimated total... ? [Note: includes value of land owned]

(Prompt with categories if not known, then circle code)

A. ...value of owned assets?

- 1 - 0 – 3m FRW
- 2 - 3m – 10m FRW
- 3 - 10m – 30m FRW
- 4 - 30m – 50m FRW
- 5 - >50m FRW

B. ...average annual working capital?

- 1 - 0 - 3m FRW
- 2 - 3 – 10m FRW
- 3 - 10m – 30m FRW
- 4 - 30m – 50m FRW
- 5 - >50m FRW

Q9.7 Overall, on a scale from 1-5, where:

1 = Strongly disagree, and
5 = Strongly agree

Do the members of this organisation generally think that the cooperative/ association... ? (Circle code for each question)

	Strongly disagree				Strongly agree
A. Is financially sound?	1	2	3	4	5
B. Has difficulty obtaining loans?	1	2	3	4	5
C. Does not have collateral for loans?	1	2	3	4	5
D. Struggles to repay loans?	1	2	3	4	5
E. Credit is required for success?	1	2	3	4	5
F. Has taken on too much financial risk?	1	2	3	4	5

Q9.8 How has this organisation's level of debt changed over the past 3 years?

- 0 - No debt over past 3 years
- 1 - Increased
- 2 - Decreased
- 3 - Stayed about the same

Section 10. Technical and Managerial Competencies (knowledge and information)

Competencies	A. Is this competency very important to the success of your organization?	B & C. On a scale from 1-5 where: 1 = Very low level, and 5 = Very high level... What level of competency do you have available to you, both on staff and from outside services, in this technical area?	
		On staff of the organization	Outside services (public or private)
	Circle code	Circle code	Circle code
Q10.1 Horticulture production/agronomic practices	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.2 Pest and disease control for horticulture crops	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.3 Irrigation technologies/management	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.4 Green house technologies/management	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.5 Certification (organic and other) of horticulture crops	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.6 Horticulture processing technologies and quality controls	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.7 Cold storage technologies and management	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.8 Packaging	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.9 Management and Accounting	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.10 Logistics and distribution of horticulture crops and products	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.11 Sales, marketing and branding of horticulture crops and products	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5
Q10.12 Export standards and requirements	0 - No ↓ 1 - Yes →	1 2 3 4 5	1 2 3 4 5

Section 11. Certifications

Q11.1 On a scale of 1-5, how informed are managers of this organisation about the potential advantages of certifications such as organic, Fair Trade? *(Circle code)*

Not well informed

Very informed

1 2 3 4 5

Q11.2 Does your organization currently hold any of the following certifications?

No *(Skip to Q11.3)* Yes *(complete all that apply)*

Year certification received?

A. RBS Certification					
B. Organic					
C. Fair Trade					
D. GlobalGAP					
E. HACCP					
F. UTZ Certified					
G. Other _____					

Q11.3 Is your organization in the process of qualifying for any certifications?

No *(Skip to Q11.4)* Yes *(complete all that apply)*

Year certification anticipated?

A. RBS Certification					
B. Organic					
C. Fair Trade					
D. GlobalGAP					
E. HACCP					
F. UTZ Certified					
G. Other _____					

Q11.4 Does your organization aspire to qualify for any certifications in the next 3 years?

No *(Skip to Q11.5)* Yes *(check all that apply)*

- | | |
|---|---|
| A. <input type="checkbox"/> RBS Certification | E. <input type="checkbox"/> HACCP |
| B. <input type="checkbox"/> Organic | F. <input type="checkbox"/> UTZ Certified |
| C. <input type="checkbox"/> Fair Trade | G. <input type="checkbox"/> Other _____
<i>(specify)</i> |
| D. <input type="checkbox"/> GlobalGAP | |

Q11.5 On a scale of 1-5, how important is certification (organic, Fair Trade, etc.) to the success of your organization in the next 5-10 years future? *(Circle code)*

Unimportant

Very Important

1 2 3 4 5

NOTE: Pose this next question only to organisations that are not already certified or in the process of becoming certified.

Q11.6 *Begin with this statement: "Buyers of horticulture products often pay producers higher prices for certified products; but at the same time, there are costs associated with becoming certified."*

If buyers offered to pay your organisation a [10%] higher price per kilo for your products, would you take steps to becoming certified?

- (Start by proposing the percentage at the top of the list (10%) and continue down the list until the respondent says "yes". Circle that code)*
- | |
|--------------------------------------|
| 1 - 10% ← <i>(start here)</i> |
| 2 - 20% |
| 3 - 40% |
| 4 - 60% |
| 5 - 80% |
| 6 - 100% |
| 7 - >100% <i>(specify)</i> % |
| 8 - No price high enough |
| 9 - DK |
| 10 - Already certified or in process |

Section 12. Sources of Information

What are the most important sources of information (3 max) that your organization uses to make the following kinds of decisions affecting your organisation?

(Record codes for most important sources – 2 max)

NA..... 0

Technology

Radio..... 1

Television..... 2

Internet..... 3

Mobile phone (SMS)..... 4

Talks/meetings

Org. members..... 5

Friends/Family..... 6

Other producers..... 7

Product sales agents..... 8

Extension agents..... 9

Project/NGO..... 10

Written Sources

Extension publications..... 11

Commercial pubs..... 12

Newspapers..... 13

Decisions about...	A.	B.
	1 st Source	2 nd Source
Q12.1 Improved production practices	<input type="text"/>	<input type="text"/>
Q12.2 Price of inputs	<input type="text"/>	<input type="text"/>
Q12.3 Post-Harvest (packaging, cold storage, etc)	<input type="text"/>	<input type="text"/>
Q12.4 Improved processing practices	<input type="text"/>	<input type="text"/>
Q12.5 Transport costs	<input type="text"/>	<input type="text"/>
Q12.6 Markets for your crops/products	<input type="text"/>	<input type="text"/>
Q12.7 Market requirements	<input type="text"/>	<input type="text"/>
Q12.8 Market prices	<input type="text"/>	<input type="text"/>
Q12.9 Certifications (organic, Fair Trade, etc.)	<input type="text"/>	<input type="text"/>
Q12.10 Improved management practices	<input type="text"/>	<input type="text"/>
Q12.11 Improved business practices	<input type="text"/>	<input type="text"/>

Section 13. Partners & Support

Q13.1 Does this organisation have any agencies, NGOs, or private sector partners that have provided direct support to your operations over the past 24 months?

0 – No (skip to Q14.1) 1 – Yes (record code and name below)

Type of Support	Delivery Partner	Funding Partner Name
Seeds..... 1	Gov't agency/service..... 1	District gov't..... 1
Fertiliser/pesticide..... 2	Local organisation..... 2	NAEB..... 2
Tools..... 3	International donor..... 3	RCA..... 3
Production practices..... 4	International org..... 4	RAB..... 4
Post-harvest support..... 5	Private sector company..... 5	EU..... 5
Processing support..... 6	Other..... 6	USAID..... 6
Marketing support..... 7		Belgian Coop..... 7
Management support..... 8		Netherlands..... 8
Financing (FRW)..... 9		GTZ (Germany)..... 9
Financing info..... 10		JICA (Japan)..... 10
Other..... 11		World Bank..... 11
		Other..... 12
A1. <input type="text"/>	A2. <input type="text"/>	A3. <input type="text"/>
B1. <input type="text"/>	B2. <input type="text"/>	B3. <input type="text"/>
C1. <input type="text"/>	C2. <input type="text"/>	C3. <input type="text"/>
D1. <input type="text"/>	D2. <input type="text"/>	D3. <input type="text"/>
E1. <input type="text"/>	E2. <input type="text"/>	E3. <input type="text"/>
F1. <input type="text"/>	F2. <input type="text"/>	F3. <input type="text"/>
G1. <input type="text"/>	G2. <input type="text"/>	G3. <input type="text"/>

(Note: this is the *delivery partner*, not the *funding partner*)

Section 14. Organisational Structure & Management (Cooperatives/Associations Only)

<p>Q14.1 A. Does this cooperative/ association have an elected and functioning Board of Directors? (Circle code) 0 - No (Skip to Q14.2) 1 - Yes</p> <p>B. If yes, how regularly does the Board of Directors meet? (Circle code) 1 - Monthly 2 - Quarterly 3 - Semi-annually 4 - Annually</p>	<p>Q14.4 Is there a contracted/paid management staff? (Circle code) 0 - No 1 - Yes</p>	<p>Q14.7 Overall, on a scale from 1-5, where: 1 = Strongly disagree, and 5 = Strongly agree</p> <p>Do the members of this cooperative / association generally think that in this organisation... ? (Circle code for each question)</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 80%;"></th> <th style="width: 5%;"></th> <th style="width: 5%; text-align: center;">Strongly Disagree</th> <th style="width: 5%;"></th> <th style="width: 5%;"></th> <th style="width: 5%; text-align: center;">Strongly Agree</th> </tr> </thead> <tbody> <tr><td>A. Members are committed to the organization?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>B. There is trust/harmony among members?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>C. Members regularly pay their membership fees?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>D. Members benefit financially from membership?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>E. Members participate in decision-making?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>F. Members trust the management staff?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>G. Members respect for decisions of leaders?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>H. Members have a sense of ownership?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>I. Members have a sense of pride?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>J. Conflicts are easily resolved?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>K. Members volunteer their services as needed?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>L. There is cohesiveness among members?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>M. Cohesiveness is important to success?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>N. The organisation has been economically successful?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> <tr><td>O. The org. will be econ. successful in the future?</td><td style="text-align: center;">1</td><td style="text-align: center;">2</td><td style="text-align: center;">3</td><td style="text-align: center;">4</td><td style="text-align: center;">5</td></tr> </tbody> </table>			Strongly Disagree			Strongly Agree	A. Members are committed to the organization?	1	2	3	4	5	B. There is trust/harmony among members?	1	2	3	4	5	C. Members regularly pay their membership fees?	1	2	3	4	5	D. Members benefit financially from membership?	1	2	3	4	5	E. Members participate in decision-making?	1	2	3	4	5	F. Members trust the management staff?	1	2	3	4	5	G. Members respect for decisions of leaders?	1	2	3	4	5	H. Members have a sense of ownership?	1	2	3	4	5	I. Members have a sense of pride?	1	2	3	4	5	J. Conflicts are easily resolved?	1	2	3	4	5	K. Members volunteer their services as needed?	1	2	3	4	5	L. There is cohesiveness among members?	1	2	3	4	5	M. Cohesiveness is important to success?	1	2	3	4	5	N. The organisation has been economically successful?	1	2	3	4	5	O. The org. will be econ. successful in the future?	1	2	3	4	5
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K. Members volunteer their services as needed?	1	2	3	4	5																																																																																													
L. There is cohesiveness among members?	1	2	3	4	5																																																																																													
M. Cohesiveness is important to success?	1	2	3	4	5																																																																																													
N. The organisation has been economically successful?	1	2	3	4	5																																																																																													
O. The org. will be econ. successful in the future?	1	2	3	4	5																																																																																													
<p>Q14.2 How often does this cooperative/ association hold a General Assembly of its members (e.g., annual meeting)? (Circle code) 1 - Monthly 2 - Quarterly 3 - Semi-annually 4 - Annually</p>	<p>Q14.5 Which of the following leadership positions are active in this organisation? (Check all that apply)</p> <p>A. <input type="checkbox"/> General Manager/Director</p> <p>B. <input type="checkbox"/> Operations/Technical Manager</p> <p>C. <input type="checkbox"/> Financial Officer/Accountant</p> <p>D. <input type="checkbox"/> Marketing Specialist</p> <p>E. <input type="checkbox"/> Other _____ (specify)</p>	<p>Q14.6 What is the highest level of formal education completed by these staff members? (Enter codes)</p> <p>N/A (no position) 0 Primary 1 Secondary 2 Post-secondary diploma.... 3 University graduate..... 4 Post-graduate degree..... 5</p> <p>A. General Manager/Director <input type="checkbox"/></p> <p>B. Operations/Technical Manager <input type="checkbox"/></p> <p>C. Financial Officer/Accountant <input type="checkbox"/></p> <p>D. Marketing Specialist <input type="checkbox"/></p> <p>E. Other _____ <input type="checkbox"/> (specify)</p>																																																																																																
<p>Q14.3 Is this cooperative / association governed by the following written documents...? (Check all that apply)</p> <p>A. <input type="checkbox"/> Up-to-date written by-laws?</p> <p>B. <input type="checkbox"/> Up-to-date rules and regulations?</p> <p>C. <input type="checkbox"/> Up-to-date management & financial procedures?</p>																																																																																																		

Horticulture Crop/Product Listing

1-19	20-39	40-49	50-59	60-79	80-89	90-99
Fruits	Vegetables	Herbs & Spices	Nuts	Cut Flowers	Flowers/herbs for processing	Horticulture Processed Products
1 - Apple 2 - Avocado 3 - Banana (fruit) 4 - Cape Gooseberry 5 - Japanese plum 6 - Lemon 7 - Mango 8 - Orange 9 - Papaya 10 - Passion fruit 11 - Pineapple 12 - Strawberry 13 - Tamarillos 19 - Other fruit	20 - Bird's eye chilies 21 - Cabbage 22 - Carrot 23 - Eggplant (local) 24 - French beans 25 - Leek 26 - Mushrooms 27 - Onion 28 - Pepper 29 - Sweet pepper 30 - Tomato 39 - Other vegetable	40 - Garlic 41 - Ginger 42 - Parsley 43 - Spicy grass 49 - Other H&S	51 - Macadamia 59 - Other nut	60 - Aromas 61 - Calla lilies 62 - Carnations 63 - Chrysanthemum 64 - Gladiolus 65 - Pastels 66 - Roses 67 - Saint Joseph (Lys) 79 - Other cut flower	80 - Eucalyptus 81 - Geranium Lemon grass 82 - Patchouli 83 - Pyrethrum 89 - Other processing flower	90 - Dried fruits 91 - Essential oils 92 - Juices 93 - Preserves 94 - Purees 95 - Pyrethrin (extract) 99 - Other proc product

Thank you!

Horticulture Survey Variables and Parameters by Questionnaire Section

Variable Name	Variable Label	N	Minimum	Maximum
Sections 1, 2, 5, 8, 9, 11: ID and diverse areas (main questionnaire)				
KeyID	KeyID (Q1.1-2&11)	1155	11001	57027
ProvinceID	Province (Q1.1)	1155	1	5
DistrictID	District ID	1155	11	57
DistrictNo	District number (Q1.1)	1155	1	8
CompLandUseYN	Competing Uses of Land (COUNT) (Q6.19)	1155	0.00	3.00
OrgID	Organization Number (within District)	1155	1	275
CoopAssocFTR	Filter Coops and Assoc - exclude all others	1155	0	1
DateInt	Date of Interview (Q1.7)	1155	01.12.2013	04.01.2014
StartTimeHR	Start Time of Interview - Hour (Q1.8A)	1144	0	90
StartTimeMIN	Start Time of Interview - Min (Q1.8A1)	1144	0	59
EndTimeHR	End Time of Interview - Hour (Q1.8B)	1134	1	19
EndTimeMIN	End Time of Interview - Min (Q1.8B1)	1134	0	75
Lat	Latitude of org -UTM (Q1.14A)	1155	374032.2524	596573.4041
Long	Longitude of org - UTM (Q1.14B)	1155	4690955.1848	4878020.3450
OrgType	Organization Type (Q2.1)	1155	1	6
RegLevel	Highest Registration Level (Q2.2)	1150	1	4
YrEstab	Year Org Established (Q2.3A)	1145	1966	2013
YrEstab2	Year Organisation established, 2 groups (Q2.3A)	1145	1	2
YrReg	Year of Org Registration (Q2.3B)	791	1969	2013
RegNCCR	Org Affiliated with NCCR (Q2.4A)	1155	0	1
RegRHIO	Org Affiliated with RHIO (Q2.4B)	1155	0	1
RegRCA	Org Affiliated with RCA (Q2.4C)	1155	0	1
RegRDB	Org Affiliated with RDB (Q2.4D)	1155	0	1
RegRPSF	Org Affiliated with RPSF (Q2.4E)	1155	0	1
TotMembr	Total Active Membership (Q2.5A)	1131	1	1840
AvgWrkDays	Avg days worked in past year (Q2.5D)	1101	0	365
TotLabDays	Total Labor (TotMembr * AvgWrkDays)(Q2.5A+D)	1099	0	183300
TotMembr4	Total Active Membership - 4 Groups (Q2.5A)	1132	1	4
PctFemDistx	Mean district % female	1155	.47	.72
MaleMembr	Total Active Male Membership (Q2.5B)	1132	0	6796
FemMembr	Total Active Female Membership (Q2.5C)	1132	0	1644
PctFemMem	Percent female members - Computed (Q2.5)	1132	0.00	1.00
PctFemMem4	Percent female members - Quartiles (Q2.5)	1132	1	4
FullTimeEmp	No of FT staff in past year (Q2.6A)	1155	0	540
PrtTimeEmp	No of PT staff in past year (Q2.6B)	1155	0	400
TotPrsDaysEmp	Total Person-Days Empl in past year (Q2.6C)	1155	0	32000
MembrChng	Change in membrshp in past 3 yrs (Q2.7A)	1130	1	4
MembrProj	Projected membrshp change in next 3 yrs (Q2.7B)	1131	1	4
PrimProd	Production as Primary Activity (Q2.8A)	1155	0	1
PrimPstHarProc	Post Harvest process primary activity (Q2.8B)	1155	0	1
PrimProc	Processing as Primary Activity (Q2.8C)	1155	0	1
PrimMarkt	Marketing as Primary Activity (Q2.8D)	1155	0	1
PrimOther	Other as Primary Activity (Q2.8E)	1155	0	1
PrimAct	Primary Activity of Organization	1155	1	4
BuyWhSIPct	Percent wholesale buyer in past year (Q5.1A)	1155	0	501
BuyRetPct	Percent retail trader in past year (Q5.1B)	1155	0	100
BuyCoopPct	Percent coop buyer in past yr (Q5.1C)	1155	0	100
BuyProcPct	Percent processor buyer in past year (Q5.1D)	1155	0	100
BuySupPct	Percent supermarket buyer in past year (Q5.1E)	1155	0	100
BuyIntlCoPct	Pct foreign comp buyer in past year(Q5.1F)	1155	0	100
BuyOtherPct	Percent other buyer in past year (Q5.1G)	1155	0	100
DestOwnDistPct	Percentage sold to own district in past year (Q5.2A)	1155	0	100
DestOwnProvPct	Percentage sold to own province in past year (Q5.2B)	1155	0	100
DestOthProvPct	Pct sold to other province in past year (Q5.2C)	1155	0	100
DestKigCityPct	Pct sold to Kigali in past year (Q5.2D)	1155	0	100
DestBurPct	Pct sold to Burundi in past year (Q5.2E)	1155	0	60
DestDRCPct	Pct sold to DRC in past year (Q5.2F)	1155	0	100
DestTanzPct	Pct sold to Tanzania in past year (Q5.2G)	1155	0	50
DestUgPct	Pct sold to Uganda in past year (Q5.2H)	1155	0	100
DestOthAfrPct	Pct sold to african ctry in past year (Q5.2I)	1155	0	90
DestAfrPct	Pct sold to African Countries (Q5.2E-I)	0	0	0
DestMidEastPct	Pct sold to mid east in past year (Q5.2J)	1155	0	0
DestEuropPct	Pct sold to Europe in past year (Q5.2K)	1155	0	100

Variable Name	Variable Label	N	Minimum	Maximum
DestMidEurPct	Pct sold to MidEast and Europe (Q5.2J-K)	0	0	0
DestOthPct	Pct sold to other in past year (Q5.2L)	1155	0	100
NoPrefMkt	No preferred market of interest in next 3 yrs (Q5.3A)	1155	0	1
PrefWhlSIX	prefer to sell to wholesaler in next 3 yrs (Q5.3B)	1155	0	1
PrefRetX	Prefer to sell to retailer in next 3 yrs (Q5.3C)	1155	0	1
PrefCoopX	Prefer to sell to coop in next 3 yrs (Q5.3D)	1155	0	1
PrefProcX	Prefer to sell to processor in next 3 yrs (Q5.3E)	1155	0	1
PrefSuperX	Prefer to sell to supermarket in next 3 yrs (Q5.3F)	1155	0	1
PrefIntlX	Prefer to sell international in next 3 yrs (Q5.3G)	1155	0	1
PrefOthX	Prefer to sell to other in next 3 yrs (Q5.3H)	1155	0	1
PrefOwnDistX	Specify Prefer to sell to own district in next 3 yrs (Q5.4ASP)	1155	0	1
PrefOwnProvX	Prefer to sell to own province in next 3 yrs (Q5.4B)	1155	0	1
PrefOthProvX	Prefer to sell to other province in next 3 yrs (Q5.4C)	1155	0	1
PrefKigX	Prefer to sell to Kigali in next 3 yrs (Q5.4D)	1155	0	1
PrefBurX	Prefer to sell to Burundi in next 3 yrs (Q5.4E)	1155	0	1
PrefDRCX	Prefer to sell to DRC in next 3 yrs (Q5.4F)	1155	0	1
PrefTanzX	Prefer to sell to Tanzania in the next 3 yrs (Q5.4G)	1155	0	1
PrefUgX	Prefer to sell to Uganda in the next 3 yrs (Q5.4H)	1155	0	1
PrefOtherAfrX	Prefer to sell to african countries in next 3 yrs (Q5.4I)	1155	0	1
PrefMidEastX	Prefer to sell to the mid east in next 3 yrs (Q5.4J)	1155	0	1
PrefEuropeX	Prefer to sell to Europe in next 3 yrs (Q5.4K)	1155	0	1
PrefOthDestX	Prefer to sell to other in next 3 yrs (Q5.4L)	1155	0	1
CurrSize	Current buyer requires size standard (Q5.5A)	1155	0	1
CurrColor	Current buyer requires color standard (Q5.5B)	1155	0	1
CurrLimDefect	Current buyer requires limited No of defects (Q5.5C)	1155	0	1
CurrTaste	Current buyer requires taste standard (Q5.5D)	1155	0	1
CurrVolume	Current buyer has big volume req (Q5.5E)	1155	0	1
CurrPackage	Current buyer requires packaging standard (Q5.5F)	1155	0	1
CurrLabel	Current buyer has labeling standard (Q5.5G)	1155	0	1
CurrSafety	Current buyer has food safety standard (Q5.5H)	1155	0	1
CurrSani	Current buyer has phytosanitary standard (Q5.5I)	1155	0	1
CurrCertif	Current buyer requires cert (Q5.5J)	1155	0	1
FutSize	Future buyer has size standard (Q5.6A)	1155	0	1
FutColor	Future buyer has color standard (Q5.6B)	1155	0	1
FutLimDefect	Future buyer requires limited No of defects (Q5.6C)	1155	0	1
FutTaste	Future buyer has taste standard (Q5.6D)	1155	0	1
FutVolume	Future buyer requires big volume (Q5.6E)	1155	0	1
FutPackage	Future buyer has packaging standard (Q5.6F)	1155	0	1
FutLabel	Future buyer has labeling standard (Q5.6G)	1155	0	1
FutSafety	Future buyer has food safety standard (Q5.6H)	1155	0	1
FutSanitation	Future buyer has phytosanitary standard (Q5.6I)	1155	0	1
FutCert	Future buyer has cert standard (Q5.6J)	1155	0	1
ChalPriceComp	Price competition is biggest challenge (Q5.7A)	1155	0	1
ChalDist	Distance to market is biggest challenge (Q5.7B)	1155	0	1
ChalCert	Cert req is biggest challenge (Q5.7C)	1155	0	1
ChalQual	High quality standards is biggest challenge (Q5.7D)	1155	0	1
ChalLrgVol	Large volume req is biggest challenge (Q5.7E)	1155	0	1
ChalInfra	Infrastrucure is biggest challenge (Q5.7F)	1155	0	1
ChalPkgMat	Lack of packaging materials is biggest challenge (Q5.7G)	1155	0	1
ChalMktInfo	Lack of market information is biggest challenge (Q5.7H)	1155	0	1
ChalOther	Other challenges (Q5.7I)	1155	0	1
NewCropYN	Org will produce new crop in next 3 yrs (Q5.8A)	1155	0	1
NewCrop1	Crop 1 code of crop for production in next 3 yrs (Q5.8B)	736	1	99
NewCrop2	Crop 2 code of crop for production in next 3 yrs (Q5.8C)	432	1	93
NewCrop3	Crop 3 code of crop for production in next 3 yrs (Q5.8D)	177	1	79
NewCrop4	Crop 4 code of crop for production in next 3 yrs (Q5.8D)	68	2	67
NewCrop5	Crop 5 code of crop for production in next 3 yrs (Q5.8E)	23	2	79
NoImprove	Org does not need infrst improv (Q5.9A)	1155	0	1
ImprRoads	Org needs better roads to succeed in future mrkt (Q5.9B)	1155	0	1
ImprElec	Org needs better electricity to succeed in future mrkt (Q5.9C)	1155	0	1
ImprWater	Org needs better water to succeed in future mrkt (Q5.9D)	1155	0	1
ImprInternet	Org needs better internet to succeed in future mrkt (Q5.9E)	1155	0	1
ImprColdStrg	Org needs better cold storage to succeed in future mrkt	1155	0	1
ImprOther	Org needs other improvements (Q5.9G)	1155	0	1
CompOthCoop	Coops in Rwanda are biggest competitor (Q5.10A)	1155	0	1
CompIndTrader	Independent traders in Rwanda are biggest competitor (Q5.10B)	1155	0	1
CompIndFrmr	Individual farmers in Rwanda are biggest competitor (Q5.10C)	1155	0	1

Variable Name	Variable Label	N	Minimum	Maximum
CompPrivCo	Private companies in Rwanda are biggest competitor (Q5.10D)	1155	0	1
CompOthCountr	International traders are biggest competitor (Q5.10E)	1155	0	1
CompOther	This org has other biggest competitor (Q5.10F)	1155	0	1
CompBurCr1	Burundi Crop 1 code (Q5.11A1)	49	1	79
CompBurCr2	Burundi Crop 2 code (Q5.11A2)	16	8	79
CompDRCCr1	DRC Crop 1 code (Q5.11B1)	3	11	27
CompDRCCr2	DRC Crop 2 code (Q5.11B2)	1	29	29
CompKenyaCr1	Kenya Crop 1 code (Q5.11C1)	5	10	92
CompKenyaCr2	Kenya Crop 2 code (Q5.11C2)	2	62	93
CompSACr1	South Africa Crop 1 code (Q5.11D1)	1	1	1
CompSACr2	South Africa Crop 2 code (Q5.11D2)	0	0	0
CompTanzCr1	Tanzania Crop 1 code (Q5.11E1)	16	10	30
CompTanzCr2	Tanzania Crop 2 code (Q5.11E2)	1	13	13
CompUgCr1	Uganda Crop 1 code (Q5.11F1)	43	7	92
CompUgCr2	Uganda Crop 2 code (Q5.11F2)	10	1	93
CompOtherCr1	Other country Crop 1 code (Q5.11G1)	3	11	92
CompOtherCr2	Other country Crop 2 code (Q5.11G2)	1	93	93
TotArea	Total area managed by org (Q6.1A)	1155	0.00	78200.00
TotAreaUnit	Unit of total area (Q6.1B)	1137	1	2
TotAreaHa	Total area (Ha) managed by org (Q6.1A)	1155	0.0000	803.0000
TotAreaHa3	Total area (Ha) managed by org (Q6.1A) - 3 groups	1137	1	3
TotAreaLoc	Location of total this land (Q6.1C)	1126	1	3
ProdArea	Area under production (Q6.2A)	1052	.20	70000.00
ProdAreaUnit	Unit of production area (Q6.2B)	1052	1	2
ProdAreaHa	Area (Ha) under production (Q6.2A)	1155	0.0000	803.0000
ProdArHa4	Area (Ha) under production (Q6.2A) (Binned)	1155	1	4
ProdAreaLoc	Location of prod land (Q6.2C)	1040	1	3
IrrigArea	Area under irrigation (Q6.3A)	598	.07	71000.00
IrrigAreaUnit	Unit of irrig area (Q6.3B)	603	1	2
IrrigAreaHa	Area (Ha) under irrigation (Q6.3A)	1155	0.0000	70.0000
IrrigAreaLoc	Location of irrig land (Q6.3C)	591	1	3
FruitArea	Land planted in fruits (Q6.4A)	435	.16	70000.00
FruitAreaUnit	Unit of fruit area (Q6.4B)	435	1	2
FruitAreaHa	Land (Ha) planted in fruits (Q6.4A)	1155	0.0000	803.0000
FruitAreaLoc	Location of fruit land (Q6.4C)	427	1	3
VegArea	Land planted in vegetables (Q6.5A)	743	.09	55100.00
VegAreaUnit	Unit of veg area (Q6.5B)	743	1	2
VegAreaHa	Land (Ha) planted in vegetables (Q6.5A)	1155	0.0000	147.0000
VegAreaLoc	Location of veg land (Q6.5C)	735	1	3
FlowerArea	Land planted in flowers (Q6.6A)	45	.10	9056.00
FlowerAreaUnit	Unit of flower area (Q6.6B)	45	1	2
FlowerAreaHa	Land (Ha) planted in flowers (Q6.6A)	1155	0.0000	20.0000
FlowerAreaLoc	Location of flower land (Q6.6C)	45	1	3
AreaFrVegFlHa	Area (Ha) in Fruits, Veggies and Flowers (Q6.1,4-6)	1155	0.0000	803.0000
OrgOwnArea	Land owned by org (Q6.7A)	236	.01	45000.00
OrgOwnAreaUnit	Unit of own area (Q6.7B)	236	1	2
OrgOwnAreaHa	Land (Ha) owned by org (Q6.7A)	1155	0.0000	78.0000
OrgOwnAreaLoc	Location of own land (Q6.7C)	230	1	3
IndOwnArea	Land owned by indiv members (Q6.8A)	254	.18	70000.00
IndOwnAreaUnit	Unit of indiv owned area (Q6.8B)	257	1	2
IndOwnAreaHa	Land (Ha) owned by indiv members (Q6.8A)	1155	0.0000	800.0000
IndOwnAreaLoc	Location of this indiv owned land (Q6.8C)	251	1	3
ComOwnArea	Land owned by community (Q6.9A)	430	.12	50000.00
ComOwnAreaUnit	Unit of comm area (Q6.9B)	430	1	2
ComOwnAreaHa	Land (Ha) owned by community (Q6.9A)	1155	0.0000	150.0000
ComOwnAreaLoc	Location of comm land (Q6.9C)	428	1	3
PrivOwnArea	Land owned by private company (Q6.10A)	309	.10	27000.00
PrivOwnAreaUnit	Unit of priv co area (Q6.10B)	309	1	2
PrivOwnAreaHa	Land (Ha) owned by private company (Q6.10A)	1155	0.0000	40.0000
PrivOwnAreaLoc	Location of priv co land (Q6.10C)	309	1	3
OtherOwnArea	Land owned by other (Q6.11A)	78	.20	31150.00
OtherOwnAreaUnit	Unit of other owned area (Q6.11B)	78	1	2
OtherOwnAreaHa	Land (Ha) owned by other (Q6.11A)	1155	0.0000	30.0000
OtherOwnAreaLoc	Location of other owned land (Q6.11C)	77	1	3
PurchArea	Land purchased (Q6.12A)	260	.01	70000.00
PurchAreaUnit	Unit of purchased area (Q6.12B)	261	1	2
PurchAreaHa	Land (Ha) purchased (Q6.12A)	1155	0.0000	205.0000
PurchAreaLoc	Location of purchased land (Q6.12C)	255	1	3
GiftArea	Land gifted (Q6.13A)	106	.20	15750.00

Variable Name	Variable Label	N	Minimum	Maximum
GiftAreaUnit	Unit of gifted area (Q6.13B)	106	1	2
GiftAreaHa	Land (Ha) gifted (Q6.13A)	1155	0.0000	740.0000
GiftAreaLoc	Location of gifted land (Q6.13C)	103	1	3
NCLeaseArea	Land leased at no cost (Q6.14A)	384	.12	50000.00
NCLeaseAreaUnit	Unit of NC leased area (Q6.14B)	384	1	2
NCLeaseAreaHa	Land (Ha) leased at no cost (Q6.14A)	1155	0.0000	600.0000
NCLeaseAreaLoc	Location of NC leased land (Q6.14C)	377	1	3
NCLeaseAreaYrLft	No of yrs remaining on NC lease (Q6.14D)	239	1.0	99.0
CostLeaseArea	Land leased at a cost (Q6.15A)	547	.10	45000.00
CostLeaseAreaUnit	Unit of paid leased area (Q6.15B)	547	1	2
CostLeaseAreaHa	Land (Ha) leased at a cost (Q6.15A)	1155	0.0000	120.0000
CostLeaseAreaLoc	Location of paid leased land (Q6.15C)	539	1	3
CostLeaseAreaYrLft	No of yrs remaining on paid lease (Q6.15D)	439	0.0	30.0
CostLeaseAreaLeasPay	Lease payment for past yr (Q6.15E)	541	105	6000000
LandExpandYN	Org would like to expand in next 3 yrs (Q6.16)	1135	0	1
WhyNoLandExp	Reason for no expansion (Q6.17)	99	1	3
LandAvail	Land available for expansion (Q6.18)	1027	1	2
CompCrop	Other crops compete with land use (Q6.19A)	1155	0	1
CompAnim	Livestock compete with land use (Q6.19B)	1155	0	1
CompProtLnd	Protected land compete with land use (Q6.19C)	1155	0	1
CompOtherX	Others compete with land use (Q6.19D)	1155	0	1
CrSpecYN	Compete with crops are promoted by crop special prog (Q6.20A)	1155	0	1
MaizeSpec	Compete with maize promoted by crop spec prog (Q6.20B)	1155	0	1
RiceSpec	Compete with rice promoted by crop spec prog (Q6.20C)	1155	0	1
PotSpec	Compete with potato promoted by crop spec prog (Q6.20D)	1155	0	1
WheatSpec	Compete with wheat promoted by crop spec prog (Q6.20E)	1155	0	1
CassavaSpec	Compete with cassava promoted by crop spec prog (Q6.20F)	1155	0	1
BeanSpec	Compete with bean promoted by crop spec prog (Q6.20G)	1155	0	1
CrConsolYN	Compete with Crops are promoted by land use cons prog YN (Q6.21A)	1155	0	1
MaizeConsol	Compete with Maize promoted by land use cons prog	1155	0	1
RiceConsol	Compete with Rice promoted by land use cons prog (Q6.21C)	1155	0	1
IrishPotConsol	Compete with Potato promoted by land use cons prog	1155	0	1
WheatConsol	Compete with Wheat promoted by land use cons prog	1155	0	1
CassavaConsol	Compete with Cassava promoted by land use cons prog (Q6.21F)	1155	0	1
BeanConsol	Compete with Bean promoted by land use cons prog (Q6.21G)	1155	0	1
OfficeM	Size of office building SQM (Q8.1A)	1155	0	20000
WarehousM	Size of warehouse SQM (Q8.1B)	1155	0	600
CollCtrM	Size of collection center SQM (Q8.1C)	1155	0	999
PackHousM	Size of pack house SQM (Q8.1D)	1155	0	153
ColdStrgM	Size of cold storage SQM (Q8.1E)	1155	0	35
OtherBldgM	Size of other buildings SQM (Q8.1F)	1155	0	3560
TotBldgsM	Total SqM in Buildings	1155	0	20000
GrnHouseYN	org owns or lease greenhouse (Q8.2A)	1155	0	1
GrnHouseM	Area in greenhouse SQM (Q8.2B)	1155	0	5000
GHCoverMtrl	Principal cover material used (Q8.2C)	77	2	3
GHFramingMtrl	Principal framing material used (Q8.2D)	79	1	3
IrrUsedYN	Irrigation Used YN (Q8.3)	1155	0	1
IrrDrip	Drip irrigation (Q8.3A)	1155	0	1
IrrHand	Hand delivered (Q8.3B)	1155	0	1
IrrWtrDivert	Groundwater diversion dam or flood (Q8.3C)	1155	0	1
IrrStrgTank	Storage Tanks gravity fed (Q8.3D)	1155	0	1
IrrPump	Mechanical pumped (Q8.3E)	1155	0	1
IrrOther	Other irrigation method (Q8.3F)	1155	0	1
OwnMotVehYN	Nbr motorized vehicle YN (Q8.4YN)	1155	0	1
Motobike	Nbr motor bike (Q8.4A)	1155	0	30
Tractor	Nbr tractor (Q8.4B)	1155	0	1
RefTruckNbr	Nbr regrigerated truck (Q8.4C)	1155	0	0
LightTruckNbr	Nbr light truck or pickup (Q8.4D)	1155	0	4
HeavyTruckNbr	Nbr heavy truck (Q8.4E)	1155	0	2
OtherVehNbr	Nbr other vehicle (Q8.4F)	1155	0	0
HoesNbr	Nbr hoes (Q8.5A)	1155	0	999
ShovelNbr	Nbr shovels or spades (Q8.5B)	1155	0	500
PitchforkNbr	Nbr pitch forks (Q8.5C)	1155	0	250
PrunSecNbr	Nbr pruning secateurs (Q8.5D)	1155	0	400
SprayersNbr	Nbr spreayers (Q8.5E)	1155	0	697

Variable Name	Variable Label	N	Minimum	Maximum
WheelBarrowNbr	Nbr wheelbarrows (Q8.5F)	1155	0	70
RecBeltNbr	Nbr receiving belt (Q8.5G)	1155	0	25
WasherNbr	Nbr washer (Q8.5H)	1155	0	12
SortTabNbr	Nbr sorting table (Q8.5I)	1155	0	0
FruitPressNbr	Nbr fruit press (Q8.5J)	1155	0	2
RefractometerNbr	Nbr refractometer (Q8.5K)	1155	0	2
SolarDryerNbr	Nbr solar dryer (Q8.5L)	1155	0	15
AirDehidNbr	Nbr air dehydrator (Q8.5M)	1155	0	1
CanningNbr	Nbr canning machine (Q8.5N)	1155	0	1
ColdContNbr	Nbr cold containers (Q8.5O)	1155	0	3
RefrigNbr	Nbr refrigerators (Q8.5P)	1155	0	20
FreezerNbr	Nbr freezer (Q8.5Q)	1155	0	12
JuiceLineNbr	Nbr juice processing line (Q8.5R)	1155	0	4
JuiceBotNbr	Nbr juice bottling machine (Q8.5S)	1155	0	3
OtherEquipNbr	Nbr other processing equip (Q8.5T)	1155	0	8
LoanYN	Loans received by org YN (Q9.1A)	1155	0	1
NbrLoans	Nbr of loans received by org (Q9.1B)	1155	0	3
LoanFRW1	Original value of loan 1 (Q9.2A)	160	22680	650000000
TimeLeft1	Time remaining on loan 1 (Q9.2B)	160	0	24
TimeUnit1	Unit of time loan 1 (Q9.2C)	160	1	2
LoanSource1	Source of loan 1 (Q9.2D)	146	1	4
LoanRate1	Annual interest rate on loan 1 (Q9.2E)	153	0.0	33.0
LoanFRW2	Original value of loan 2 (Q9.3A)	20	100000	300000000
TimeLeft2	Time remaining on loan 2 (Q9.3B)	20	0	34
TimeUnit2	Unit of time loan 2 (Q9.3C)	14	1	2
LoanSource2	Source of loan 2 (Q9.3D)	16	1	4
LoanRate2	Annual interest rate on loan 2 (Q9.3E)	16	.5	25.0
LoanFRW3	Original value of loan 3 (Q9.4A)	4	180000	2590000
TimeLeft3	Time remaining on loan 3 (Q9.4B)	4	0	11
TimeUnit3	Unit of time loan 3 (Q9.4C)	3	1	1
LoanSource3	Source of loan 3 (Q9.4D)	4	1	4
LoanRate3	Annual interest rate on loan (Q9.4E)	3	.5	13.5
TotLoan	Total Loans over past 24 mos (Q9.2-4)	1155	0	950000000
PayMissYN	Payment was missed (Q9.5YN)	160	0	1
NbrPayMiss	No of missed payments (Q9.5)	12	1	5
AssetValFRW	Estimated value of owned assets (Q9.6A)	1155	1	5
AssetValFRW4	Estimated value of owned assets - 4 groups (Q9.6A)	1155	1	4
AnnWrkCapFRW	Estimated average annual working capital (Q9.6B)	1155	1	5
FinSound	Members believe assoc is financ sound (Q9.7A)	1141	1	5
DiffLoan	Members believe assoc cannot obtain loans (Q9.7B)	1142	1	5
DiffLoanFlip	Members believe assoc cannot obtain loans - Flip 1=5 (Q9.7B)	1142	1	5
NoCollat	Members believe assoc lacks collateral (Q9.7C)	1141	1	5
NoCollatFlip	Members believe assoc lacks collateral - Flip 1=5 (Q9.7C)	1141	1	5
RepayLoan	Members believe assoc cannot to repay loans (Q9.7D)	1138	1	5
RepayLoanFlip	Members believe assoc cannot to repay loans - Flip 1=5 (Q9.7D)	1138	1	5
CreditForSucc	Members believe that credit is req for success (Q9.7E)	1140	1	5
TooMuchFinRisk	Members believe assoc too finan risky (Q9.7F)	1141	1	5
TooMuchFinRiskFlip	Members believe assoc too finan risky - Flip 1=5 (Q9.7F)	1141	1	5
FinStatusOrg	Mean financial status of org - scale (Q9.7)	1142	1.00	4.60
FinStatusOrg4	Mean financial status of org - 4 groups (Q9.7)	1142	1	4
DebtChng3Yr	Change in level of debt over past 3 yrs (Q9.8)	1155	0	3
CertKnow	Org knows advantages of cert (Q11.1)	1155	1	5
CertifiedYN	Organization certified YN (Q11.2YN)	1155	0	1
CertRBS	Year Org RBS cert (Q11.2A)	10	2005	2012
CertOrganic	Year Org organic cert (Q11.2B)	2	2009	2013
CertFairTrade	Year Org fair trade cert (Q11.2C)	3	2003	2012
CertGlobalGap	Year Org Global GAP cert (Q11.2D)	1	2011	2011
CertHACCP	Year Org HACCP cert (Q11.2E)	1	2010	2010
CertUTZ	Year Org UTZ cert (Q11.2F)	0		0
CertOther	Year Org other cert (Q11.2G)	22	2006	2013
ProcCertifyYN	Org qualifying for cert YN (Q11.3YN)	1151	0	1
ProcRBS	Year Org qualifying for RBS cert (Q11.3A)	36	2013	2017
ProcOrganic	Year Org qualifying for organic cert (Q11.3B)	11	2014	2017
ProcFairTrade	Year Org qualifying for fair trade cert (Q11.3C)	4	2014	2015
ProcGlobalGap	Year Org qualifying for global GAP cert (Q11.3D)	3	2014	2020
ProcHACCP	Year Org qualifying for HACCP cert (Q11.3E)	2	2014	2014
ProcUTZ	Year Org qualifying for UTZ cert (Q11.3F)	0		0
ProcOther	Year Org qualifying for other cert (Q11.3G)	1	2014	2014

Variable Name	Variable Label	N	Minimum	Maximum
IntlorRBSCert	Number of Intl or RBS Certs (Q11.2-3)	1155	0	4
FutCertifYN	Org aspires to qualify for cert YN (Q11.4YN)	1152	0	1
FutRBS	Org aspires to qualify for RBS (Q11.4A)	1155	0	1
FutOrganic	Org aspires to qualify for organic (Q11.4B)	1155	0	1
FutFairTrade	Org aspires to qualify for fair trade (Q11.4C)	1155	0	1
FutGlobalGap	Org aspires to qualify for global GAP (Q11.4D)	1155	0	1
FutHACCP	Org aspires to qualify for HACCP (Q11.4E)	1155	0	1
FutUTZ	Org aspires to qualify for UTZ (Q11.4F)	1155	0	0
FutOtherCert	Org aspires to qualify for other cert (Q11.4G)	1155	0	1
FutIntRBSCert	Nbr of future Intl or RBS Cert planned (Q11.4)	1155	0	4
ActCertYN	Org has Intl or RBS Certs (Q11.2)	1155	0	1
ProcCertYN	Org in process of Intl or RBS Cert (Q11.3)	1155	0	1
PlanCertYN	Org plans Intl or RBS Cert in 3 yrs (Q11.4)	1155	0	1
CertStatus	Org certification status (Q11.2-4)	1155	0	3
CertImport	Importance of cert for success in the next 5 to 10 yrs (Q11.5)	1155	1	5
CertPrem	Premium desired to become certified? (Q11.6)	1155	1	10
CertPremSp	Specify Premium desired to become certified? (Q11.6SP)	44	110	800
CertPremOrd	Premium desired to become certified? % only (Q11.6)	0		0
BoardYN	Assoc has board of directors (Q14.1A)	1155	0	1
BrdMtgFreq	Board meetings (Q14.1B)	1098	1	4
AnnualMtgFreq	General assembly meetings (Q14.2)	1112	1	4
ByLawsYN	Assoc has written bylaws (Q14.3A)	1155	0	1
RuleNRegYN	Assoc has written rules and reg (Q14.3B)	1155	0	1
ProceduresYN	Assoc has updated mang and fin proced (Q14.3C)	1155	0	1
PaidMangYN	Assoc has paid managerial staff (Q14.4)	1155	0	1
GrlMngrYN	Active general managr (Q14.5A)	1155	0	1
TechMngrYN	Active technical managr (Q14.5B)	1155	0	1
FinOffcrYN	Active financ offcr (Q14.5C)	1155	0	1
MrktSpecYN	Active marketing spec (Q14.5D)	1155	0	1
OtherPosYN	Other position active (Q14.5E)	1155	0	1
GrlMangEd	Highest educ level of grl mang (Q14.6A)	222	1	5
TechMangEd	Highest educ level of tech mangr (Q14.6B)	105	1	4
FinOffcrEd	Highest educ level of finance offcr (Q14.6C)	213	1	4
MrktSpecEd	Highest educ level of marketing spec (Q14.6D)	58	1	4
OtherEd	Highest educ level of other staff (Q14.6E)	72	1	4
Commit	Members are committed to org (Q14.7A)	1123	2	5
Trust	Harmony among members (Q14.7B)	1123	1	5
PayFee	Members regularly pay fees (Q14.7C)	1118	1	5
FinBenefit	Members benefit financially (Q14.7D)	1122	1	5
DecMake	Members participate in decisions (Q14.7E)	1120	1	5
TrustMgment	Members trust management (Q14.7F)	1122	1	5
RespectMgment	Members respect decisions (Q14.7G)	1121	1	5
SenseOwner	Members feel ownership (Q14.7H)	1123	1	5
SensePride	Members feel pride (Q14.7I)	1120	1	5
ConflEasyRes	Conflicts are easily resolved (Q14.7J)	1122	1	5
VolunteerServ	Members volunteer services (Q14.7K)	1122	1	5
Cohesive	There is cohesivns btw members (Q14.7L)	1121	2	5
CohesiveImport	Cohesivns is important to succeed (Q14.7M)	1122	1	5
EconSucc	Org has been econ successful (Q14.7N)	1121	1	5
FutEconSucc	Org will be econ successful in future (Q14.7O)	1121	1	5
MeanOrgStrgth	Mean Org Strength -- across 15 indicators (Q14.7)	1123	1.60	5.00
SaleFruitFRW	Total sale of fruits (FRW) - SUM Sect 3	1155	0	109440000
SaleVegFRW	Total sale of veg (FRW) - SUM Sect 3	1155	0	1,582,970,000
SaleOthHortCropFRW	Total sale of other hort crops (FRW) - SUM Sect 3	1155	0	39420000
MainRev	Org main revenue based on FRW sales	1155	1	4
SaleCropTotFRW	Total crop sales (FRW) - Sum Sect 3	1155	0	1582970000
SaleCropTotFRWpp	Sum of total crop sales pp (FRW) - SUM Sect 3	1155	0	15545965
SaleCropTotFRW5	Total crop sales (FRW) - 5 Groups	1146	1	5
SaleProdTotFRW	Total processed product sales (FRW) - Sum Sect 4	1155	0	211620000
SaleCrPrTotFRW	Total sales of crops and proc products (FRW)	1155	0	1582970000
SaleCrPrTotFRW5	Total crop+product sales (FRW) - 5 Groups	1155	1	5
FRWperDay	FRW per day of labor (Q2.5D)	1087	0	99706
FRWperMem	FRW per day of labor (Q2.5D)	1137	0	14108000
FRWperHa	FRW per hectare land under production (Q6.2)	1052	0	192307692
FRWperKGx	Mean FRW per KG (Section 3)	1073	10.49	7500.00
KGperHa	Total KG per hectare land under production (Q6.2)	1052	0	533333
SaleFruitKG	Total sale of fruits (KG) - SUM Sect 3	1155	0	756933
SaleVegKG	Total sale of veg (KG) - SUM Sect 3	1155	0	6019000
SaleOthHortCropKG	Total sale of other hort crops (KG) - SUM Sect 3	1155	0	54000

Variable Name	Variable Label	N	Minimum	Maximum
SaleCropTotKG	Total crop sales (KG) - Sum Sect 3	1155	0	6019000
AccLevelOrgMean	Mean level of access to inputs/services - Mean (Q7B	1139	1.00	5.00
AccLevelN	Nbr of inputs/services indic as important and used in mean (Q7B)	1155	0	23
AccLevelOrgMean4	Mean level of access to inputs/services - Mean (Q7B (Quartiles)	1139	1	4
IntCompX	Org Mean internal comp across all items - (Q10A)	1131	1.00	5.00
ExtCompX	Org Mean external comp across all items - (Q10B)	1131	1.00	5.00
NbrSuppTyp	Number of diff types of support received (Q13.1A)	1155	0	7
ImprInptIdx	Mean Inputs Investment index (from 3.2-5)	1144	0.00	8.00
ImprInptIdx3	Mean Inputs Investment index (from 3.2-5) - 3 groups	1144	1	3
PassFrtFRW	Passion Fruit FRW (Q3.1A & Q3.10)	100	3000	80000000
PineAppleFRW	Pineapple FRW (Q3.1A & Q3.10)	212	2000	46793823
TamarilloFRW	Tamarillo FRW (Q3.1A & Q3.10)	111	700	90000000
OtherFrtFRW	Other Fruit FRW (Q3.1A & Q3.10)	46	3000	144000000
CabbageFRW	Cabbage FRW (Q3.1A & Q3.10)	504	294	100000000
CarrotFRW	Carrot FRW (Q3.1A & Q3.10)	304	700	60000000
EggPlantFRW	Egg Plant FRW (Q3.1A & Q3.10)	248	5000	180000000
OnionFRW	Onion FRW (Q3.1A & Q3.10)	197	1200	600000000
SwtPeppFRW	Sweet Pepper FRW (Q3.1A & Q3.10)	150	1000	500000000
TomatoFRW	Tomato FRW (Q3.1A & Q3.10)	279	3000	309280000
OtherVegFRW	Other Vegetable FRW (Q3.1A & Q3.10)	308	900	109800000
SpecCropFRW	Specialty Crops (flowers, nuts, etc) FRW (Q3.1A & Q3.10)	49	2000	39420000
Maxval	Max Value computed across all crops FRW	1075	294	600000000
MainCrop	Main crop grown by org (based on FRW sales)	1075	10	999
PassFrtFRW3	Percentile Group of PassFrtFRW (Q3.1&11)	100	1	3
PineAppleFRW3	Percentile Group of PineAppleFRW (Q3.1&11)	212	1	3
TamarilloFRW3	Percentile Group of TamarilloFRW (Q3.1&11)	111	1	3
OtherFrtFRW3	Percentile Group of OtherFrtFRW (Q3.1&11)	46	1	3
CabbageFRW3	Percentile Group of CabbageFRW (Q3.1&11)	504	1	3
CarrotFRW3	Percentile Group of CarrotFRW (Q3.1&11)	304	1	3
EggPlantFRW3	Percentile Group of EggPlantFRW (Q3.1&11)	248	1	3
OnionFRW3	Percentile Group of OnionFRW (Q3.1&11)	197	1	3
SwtPeppFRW3	Percentile Group of SwtPeppFRW (Q3.1&11)	150	1	3
TomatoFRW3	Percentile Group of TomatoFRW (Q3.1&11)	279	1	3
OtherVegFRW3	Percentile Group of OtherVegFRW (Q3.1&11)	308	1	3
SpecCropFRW3	Percentile Group of SpecCropFRW (Q3.1&11)	49	1	3
Elevation	Elevation (m)	1155	0	2714
DistPavRdKm	Distance from paved road (Km)	1155	.004	29.486
DistPavRdKm4	Distance from paved road (Km) 4 groups	1155	1	4
DistNatRdKm	Distance from national road (Km)	1155	0.000	26.137
DistUrbCtrKm	Distance to nearest urban center (Km)	1155	.37	93.78
DistToKigaliKm	Distance to Kigali (Km)	1155	1.63	151.10
DistUrbCtrKm4	Distance to nearest urban center (Km) (Binned)	1155	1	4
SectorPop	Sector Population	1155	0	78106
Section3: Crop production, inputs use and sales				
KeyID	KeyID (V1)	3171	11001	57027
CropOrder	Crop Line number	3171	1	14
PrimAct	Primary Activity of Organization	3171	1	4
ProducerFTR	Filter: Include only producer orgs	3171	0	1
ProvinceID	Province (Q1.1)	3171	1	5
DistrictID	District ID	3171	11	57
CoopAssocFTR		3171	0	1
Crop	Crop Code (Q3.1B)	3171	1	89
CropLite	Crop Code Condensed (Q3.1B)	3171	10	89
CropLite2	Crop Code Condensed (Q3.1B)	3171	10	999
CropGrp	Crop Group	3171	1	6
CropGrp3	Crop 3 Groups	3171	1	3
SeedType	Seed/plant materials used (Q3.2)	3148	0	3
SeedTpOrd	ORD Seed/plant materials used (Q3.2)	3148	0	2
FertType	Fertilizer Used (Q3.3)	3148	0	3
FertTpOrd	ORD Fertilizer Used (Q3.3)	3148	0	2
PestFungType	Pesticide/Fungicide used (Q3.4)	3148	0	3
PestFungTpOrd	ORD Pesticide/Fungicide used (Q3.4)	3148	0	2
Irrigation	Irrigation used (Q3.5)	3148	0	4
IrrigOrd	ORD Irrigation used (Q3.5)	3148	0	2
ImprInptIdx	Improved Inputs Summated Index	3148	0	8
OrgType	Organization Type (Q2.1)	3171	1	6

Variable Name	Variable Label	N	Minimum	Maximum
QtyHarvestKG	Quantity harvested - Kg (Q3.6L1)	3084	0	3000000
GradeSort	Grading/sorting to meet market (Q3.7)	3171	0	1
SpecPack	Specialized packaging used (Q3.8)	3171	0	4
ColdStrg	Cold storage used (Q3.9)	3171	0	1
QtySoldKG	Quantity sold - Kg (Q3.10)	3137	0	3000000
ProdSoldKG	KG sold - KG produced (Q3.10 - Q3.6)	3080	-517700	30000
FruitSoldKG	Quantity of fruits sold (KG)	3171	0	756933
VegSoldKG	Quantity of vegetables sold (KG)	3171	0	3000000
OthHortSoldKG	Quantity of other hort crops sold (KG)	3171	0	54000
SaleValFRW	Value of crop sales - FRW (Q3.11)	3170	0	600000000
FRWperKG	FRW per KG sold (Q3.10-11)	2703	10.4	15000
FruitFRW	Value of fruit sales (FRW)	3171	0	90000000
VegFRW	Value of veg sales (FRW)	3171	0	600000000
OtherHortFRW	Value of other hort sales (FRW)	3171	0	39420000
SaleValFRWpp	Value received per particip member - FRW (Q3.12)	2599	0	11943805
PrincMktOutlet	Principle market outlet of sale (Q3.13)	2791	1	7
PrincMktOutletGP	Principal market outlet -- grouped	2791	1	7
PrincMktOutletGP4	Principal market outlet -- 4 groups	2791	1	7
PrincMktOutletGP2	Principal market outlet -- 2 groups	2791	1	2
CropContract	Crop grown under contract? (Q3.14)	3169	0	2
PassFrtFRW	Passion Fruit FRW (Q3.1A & Q3.10)	120	0	80000000
PineAppleFRW	Pineapple FRW (Q3.1A & Q3.10)	227	0	46793823
TamarilloFRW	Tamarillo FRW (Q3.1A & Q3.10)	155	0	90000000
OtherFrtFRW	Other Fruit FRW (Q3.1A & Q3.10)	145	0	144000000
CabbageFRW	Cabbage FRW (Q3.1A & Q3.10)	548	0	100000000
CarrotFRW	Carrot FRW (Q3.1A & Q3.10)	341	0	60000000
EggPlantFRW	Egg Plant FRW (Q3.1A & Q3.10)	282	0	180000000
OnionFRW	Onion FRW (Q3.1A & Q3.10)	233	0	600000000
SwtPeppFRW	Sweet Pepper FRW (Q3.1A & Q3.10)	164	0	500000000
TomatoFRW	Tomato FRW (Q3.1A & Q3.10)	299	0	308880000
OtherVegFRW	Other Vegetable FRW (Q3.1A & Q3.10)	535	0	1080000000
SpecCropFRW	Specialty Crops (flowers, nuts, etc) FRW (Q3.1A & Q3.10)	121	0	39420000
Elevation	Elevation (m)	3171	0	2714
DistPavRdKm	Distance from paved road (Km)	3171	0.004	29.486
DistPavRdKm4	Distance from paved road (Km) 4 groups	3171	1	4
DistNatRdKm	Distance from national road (Km)	3171	0	26.137
Section 4: Processed products production and sales				
KeyID	KeyID (V1)	40	21024	56011
ProdOrder	Product Line number	40	1	5
ProvinceID	Province (Q1.1)	40	2	5
DistrictID	District ID	40	21	56
Product	Product (Q4.1B)	40	90	99
SrcRawProd1	1st Source of Raw F&V (Q4.2A)	40	1	4
SrcRawProd2	2nd Source of Rwan F&V (Q.4.2B)	24	2	4
QtyProc12mo	Quantity Processed over past 12 months (Q4.3A)	40	10	588200
QtyProdUnit	Unit of processed product (Q4.3B)	40	1	2
QtyProdSold	Quantity Product Sold - (Kg or Lt) (Q4.4A)	40	0	588200
QtyProdSoldUnit	Unit of sold processed product (Q4.3B)	40	1	2
ProdSaleFRW	Total Revenue from sale of product (Q4.5)	40	0	156600000
FRWperKgLt	FRW per Kg/Lt sold (Q3.10-11)	35	64	10000
AvgProdSaleFRWpp	Average Revenue per member (Q4.6)	14	5600	1180580
PrimPackMat	Primary packaging material used (Q4.7)	40	0	7
PrimMktOutlet	Primary market outlet for product (Q4.8)	39	1	7
ProdOnContract	Product produced on contract? (Q4.9)	40	0	2
Section 6: Land by use and ownership category				
KeyID	KeyID	17325	11001	57027
ProvinceID	Province (Q1.1)	17325	1	5
DistrictID	District ID	17325	11	57
LandUseTp	Land Use Type (Q6.1-15)	17325	1	15
Area	Area (non-standardized units) (Q6A)	6632	0	78200
Unit	Unit of Area Measurement (HA vs SQM) (Q6B)	6623	1	2
Ha	Land area operated byorg (HA) (Q6A&B)	17325	0	803
LocSlope	Localization of land on hillside (Q6C)	6533	1	3
LeaseAreaYrLft	No of yrs remaining on lease (Q6.14D & 6.15D)	932	0	99
CostLeaseAreaLeasPay	Lease payment for past yr (Q6.15E)	545	0	6000000
ProdHa	Production per Hectare (Section 3)	17325	0	1

Variable Name	Variable Label	N	Minimum	Maximum
Section 7: Access to inputs & services				
KeyID	KeyID	26565	11001	57027
ProvinceID	Province (Q1.1)	26565	1	5
DistrictID	District ID	26565	11	57
InputID	InputID (Q7.1-23)	26565	1	23
ImpSuccYN	Input/service important to success YN (Q7A)	26565	0	1
AccLevel	Level of access to input/service, 1-5 (Q7B)	14961	1	5
AccLevelOK	Good access to input/service (3-5 on scale)(Q7B)	14961	0	1
PrimConst	Primary Constraint to access to input/Service (Q7C)	14882	0	5
PrimAct	Primary Activity of Organization (from Section 1)	26565	1	4
MainRev	Org main revenue based on FRW sales (from Section 3)	26565	1	4
ProdArHa4	Area (Ha) under production (Q6.2A) (Binned)	26565	1	4
AssetValFRW4	Estimated value of owned assets - 4 groups (Q9.6A)	26565	1	4
CompCrop	Other crops compete with land use (Q6.19A)	26565	0	1
CrSpecYN	Compete with crops are promoted by crop special prog (Q6.20A)	26565	0	1
Section 9: Financial loans				
KeyID	KeyID (Q1.1-2&11)	184	11005	57021
LoanNbr	Loan Number	184	1	3
ProvinceID	Province (Q1.1)	184	1	5
DistrictID	District ID	184	11	57
LoanFRW	Original value of loan (Q9.2-3-4A)	184	22680	650000000
TimeLeft	Time remaining on loan 1 (Q9.2-3-4B)	184	0	34
TimeUnit	Unit of time loan 1 (Q9.2-3-4C)	184	1	2
MosLeft	Months remaining on loan (Q9.2-3-4BC)	184	0	180
LoanSource	Source of loan 1 (Q9.2-3-4D)	166	1	6
LoanRate	Annual interest rate on loan 1 (Q9.2-3-4E)	172	0	33
Section 10: Organisational competencies				
KeyID	KeyID	13860	11001	57027
CompArea	Competency area grouping (Q10) grouped	12705	1	3
Competency	Competency line (Q10)	13860	1	12
CompImpYN	Competency important for success YN (Q10A)	13860	0	1
InternComp	Competencyavail on staff (Q10B)	7336	1	5
ExternComp	Competencyavail from external source (Q10C)	7336	1	5
Section 12: Access & sources of information				
KeyID	KeyID	25410	11001	57027
InfoOn	Decision about... (Q12)	25410	1	11
SourceNum	Source Number (Q12)	25410	1	2
SourceInfo	Source of info (Q12A&B)	15731	1	13
Section 13: Partners and external support				
KeyID	KeyID	1224	11001	57023
LineNo	Line number (Q13.1)	1224	1	7
SuppType	Type of support received (Q13.1A)	1224	1	11
DelivPartner	Delivery Partner (Q13.1B)	1063	1	6
FundPartner	Funding Partner (Q13.1C)	1198	1	12
FundPartGp	Funding Partner Grouped (Q13.1C)	1198	1	4
Section 14: Organisational strength & cohesiveness				
KeyID	KeyID	16821	11001	57027
IndicatorNo	Org strength indicator (Q14.7A-O)	16821	1	15
IndicScore	Indicator score 1-5 (Q14.7)	16821	1	5