

# Rwanda - Rwanda Seasonal Agriculture Survey 2013

**National Institute of Statistics of Rwanda**

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## Overview

### Identification

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#### ID NUMBER

RWA\_2013\_RSAS\_v01\_EN\_M\_v01\_A\_OCS

### Version

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#### VERSION DESCRIPTION

Version 1.1 Edited anonymized dataset for public use

#### PRODUCTION DATE

2015-06-26

### Overview

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#### ABSTRACT

The main objective of the new agricultural statistics program is to provide timely, accurate, credible and comprehensive agricultural statistics that would not only describe the structure of agriculture in Rwanda in terms of land use, crop production and livestock and can be used for food and agriculture policy formulation and planning; but also which can be used for the compilation of national accounts statistics.

In this regard, the National Institute of Statistics of Rwanda (NISR) conducted the Seasonal Agriculture Survey (SAS) from November 2012 to September 2013 to gather up-to-date information for monitoring progress on agriculture programs and policies in Rwanda, including the Economic Development and Poverty Reduction Strategy (EDPRS), the Millennium Development Goals (MDGs) and Vision 2020. This 2013 RSAS covered three agricultural seasons (A, B and C) and provides data on background characteristics of the agricultural operators, farm characteristics (area, yield and production), agricultural practices, agricultural equipment, use of crop production by agricultural operators and by large scale farmers.

#### KIND OF DATA

Sample survey data [ssd]

#### UNITS OF ANALYSIS

Agricultural holdings

### Scope

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#### NOTES

The scope of 2013 Rwanda Seasonal Agriculture Survey (RSAS) concerned demographic and social characteristics of agricultural operators and large scale farmers, as well as, their farm characteristics (area, yield and production; agricultural practices; small agricultural equipments; and use of crop production).

### Coverage

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#### GEOGRAPHIC COVERAGE

National coverage

#### UNIVERSE

The RSAS 2013 targeted agricultural operators and large scale farmers operating in Rwanda.

## Producers and Sponsors

### PRIMARY INVESTIGATOR(S)

Name	Affiliation
National Institute of Statistics of Rwanda	Ministry of Finance and Economic Planning

### OTHER PRODUCER(S)

Name	Affiliation	Role
Ministry of Agriculture and Animal Resources	Government of Rwanda	Technical partner
National Agriculture Export Board	Government of Rwanda	Technical partner
Rwanda Agricultural Board	Government of Rwanda	Technical partner
Rwanda Natural Resources Authority	Government of Rwanda	Technical partner
Rwanda Environmental Management Authority	Government of Rwanda	Technical partner
National Bank of Rwanda	Government of Rwanda	Technical partner

### FUNDING

Name	Abbreviation	Role
The Government of Rwanda	GoR	Funder
The World Bank	WB	Funding partner
Uk aid		Funding partner
European Union	EU	Funding partner

### OTHER ACKNOWLEDGEMENTS

Name	Affiliation	Role
Local Government	Ministry of Local Governance	Survey campaign an Mobilisation

## Metadata Production

### METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Office of Chief Statistician	OCS	Food and Agriculture Organization	Metadata adapted for FAM
National Institute of Statistics of Rwanda	NISR	Ministry of Finance and Economic Planning	Metadata producer

### DDI DOCUMENT VERSION

RWA\_2013\_RSAS\_v01\_EN\_M\_v01\_A\_OCS\_v01

### DDI DOCUMENT ID

DDI\_RWA\_2013\_RSAS\_v01\_EN\_M\_v01\_A\_OCS\_FAO

# Sampling

## Sampling Procedure

The sample was composed of two categories of respondents: Agricultural Operators and Large Scale Farmers (LSF). For the category of Agricultural Operators, the 2013 RSAS benefited from a dual frame sampling design called Multiple Frame Survey (MFS). For the category of LSF, everyone has been enumerated.

The 2013 Rwanda Seasonal Agricultural Survey (RSAS) used imagery from Rwanda Natural Resources Authority (RNRA) with a very high resolution of 25 centimeters. During the construction of the area sampling frame, the entire land area of Rwanda was subdivided into 10 non-overlapping land-use strata defined by proportion of cultivated land or other land-use characteristics. Three of these strata were chosen to be used for the survey since they were composed of agricultural land. Thereafter, agricultural land strata were delineated into segments within the Primary Sampling Units (PSU) with identifiable physical boundaries. For agricultural operators, the segments were the Second Stage Sampling (SSU) units.

The 2013 RSAS covered 327 segments, spread throughout the country during the two main agricultural seasons (A and B) and 251 segments during the Season C both in mountains and marshlands areas.

The survey covered 15,441 Agricultural Operators and 562 LSF in season A; 15,730 Agricultural Operators and 503 LSF in Season B; and 1,412 Agricultural Operators in Season C. In Season C, LSF were not covered. Each selected PSU having a size of 200 - 400 hectares was subdivided into Second Stage Sampling Units (SSUs) of around 20 hectares each, following natural boundaries. Note that for stratum 3 PSUs, a segment had a size of around 50 hectares. In every selected PSU, one SSU (or segment) was randomly selected for data collection purposes.

It is important to note that in each of agricultural season A and B, data collection was undertaken in two phases. Phase I was mainly used to collect data on demographic and social characteristics of interviewees, area under crops, crops planted, rainfall, livestock, etc. Phase II was mainly devoted to the collection of data on yield and production of crops.

Regarding the selection of respondents, from the list of LSF in Phase I of Season A or Season B, all 562 LSF were enumerated. The LSF were engaged in either Crop farming activities only or Livestock farming activities only or both Crop and Livestock farming activities. For Agricultural Operators (being the Small Scale Farmers within the segment), every selected segment was firstly screened using the screening form. That means enumerators accounted for every plot inside the segment. All tracts were either agricultural (cultivated land and fallow land) or non-agricultural land (water, forests, roads, rocky and bare soils and buildings).

During Phase I, a complete enumeration of all farmers having agricultural land and operating within the selected segment was undertaken by using a farm questionnaire. In Phase II, 25% of the Agricultural Operators undertaking either Crop farming activities only or both Crop and Livestock farming were selected and interviewed using a farm questionnaire for this phase. In Phase II, Season A, a sample of 1,799 Agricultural Operators was selected using the method of Probability Proportional to Size (PPS) in each district.

In Phase II, Season B, a sample of 1,941 Agricultural Operators was selected as follows:

- a) 1,545 Agricultural Operators were selected of which 1500 were from Strata 1 and 2 selected at district level, and 45 Agricultural Operators were from Stratum 3 selected at country level (they were mainly from Nyagatare, Gatsibo and Kayanza districts). Again the PPS method was used, area under crops being the measure of size in each district; also
- b) 500 Agricultural Operators were selected using area under crops in each district. Due to the previous selection explained in a) above only 396 were retained due to the removal of duplicates. This second sample gave weight to major crops and thus increased representativeness of crop yield in the districts.

In Season C, a screening form was used to undertake a complete enumeration and account for every plot inside the segment on which land use was taking place. From a list of Agricultural Operators having agricultural land and cultivating Season C Crops:

- a) A 10% sample of operators in Marshlands was selected for data collection that combined farm inputs, expenditure and production questions;
- b) A complete enumeration in Mountain sites was undertaken for data collection that combined farm inputs, expenditure and production questions.

## Response Rate

The response rate for Seasonal Agriculture Survey is 98%.

## Weighting

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The sample weights were calculated for each district considering the total number of segments in each district and the sample size in the specific districts.

# Questionnaires

## Overview

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There were two types of questionnaires used for this survey namely Screening questionnaire and farm questionnaires.

A Screening Questionnaire was used to collect information that enabled identification of an Agricultural Operator or Large Scale Farmer and his or her land use.

Farm questionnaires were of two types:

- a) Phase I Farm Questionnaire was used to collect data on characteristics of Agricultural Operators, crop identification and area, inputs (seeds, fertilizers, labor, ...) for Agricultural Operators and large scale farmers.
- b) Phase 2 Farm questionnaire was used in the collection of data on crop production and use of production.

It is important to mention that all these Farm Questionnaires were subjected to two/three rounds of data quality checking. The first round was conducted by the enumerator and the second round was conducted by the team leader to check if questionnaires had been well completed by enumerators.

For season C, after screening, an interview was conducted for each selected tract/Agricultural Operator using one consolidated Farm questionnaire.

All the surveys questionnaires used were published in both English and Kinyarwanda languages.

## Data Collection

### Data Collection Dates

Start	End	Cycle
2012-11	2013-02	Season A
2013-03	2013-07	Season B
2013-08	2013-09	Season C

### Data Collection Mode

Face-to-face paper [f2f]

### Data Collection Notes

The survey used 120 Enumerators in 40 field teams and 43 Team leaders giving a ratio of one Team leader to 3 Enumerators.

All field work staff in 2013 SAS has a degree in Agronomy Science and were trained before starting data collection.

A higher level supervision staff from NISR and MINAGRI visited the field teams during each phase of data collection to ensure quality control.

Enumerators and Team leaders had adequate materials composed of Enumerator's Instruction manual, Screening questionnaire, Farm questionnaires, Measuring tapes, Ruler, Pens, Pencils, Calculator, Weighing scales, Global Positioning System (GPS), Personal Data System (PDA), Maps, Rain coats, Boots, Umbrella, First aid equipment, etc. Each team was assigned a vehicle.

Before proceeding to the field, Enumerators and their Team leaders checked that they had all necessary materials required for their field work. All staff were required to arrive early in the field (Segment or LSF).

The next step was the Segment delineation and to take geographical coordinates of the identified landmarks to allow supervisors to check if the Segment was delineated appropriately and to ensure the collected data was relating to the plots inside the Segment or LSF.

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### Data Collectors

Name	Abbreviation	Affiliation
National Institute of Statistics of Rwanda	NISR	Ministry of Finance and Economic Planning

### Supervision

The survey used 120 Enumerators organised around 40 field teams and 40 team leaders giving a ratio of one team leader to 3 Enumerators.

At the bottom of the hierarchy, there are enumerators who would be assisted by a team leader also known as a controller. His/ her main function is to introduce the enumerators to the various key people from the sector to the villages leaders up to operators in the Secondary Sampling Unit (known as Segment), and assist enumerators during the whole course of the survey

A higher level supervision staff from NISR and MINAGRI visited the field teams during each phase of data collection to ensure quality control.

Responsibilities of a Team Leader is to manage the interviewers to ensure successful completion and quality of data collected in a given time period for the fieldwork.

He/she was expected to record information about the fieldwork by completing the fieldwork forms, which track the status of completion of the work in the field, document problems in the field and solutions taken to resolve these problems, and track the data entry process. Specifically, his/her tasks included:

1. Introduce the survey and interviewers at local level where the survey is administered.
2. Review questionnaires and check that it has been correctly filled in.
3. Monitor and attend some interviews and make comments on the worker's performance.
4. Meet frequently with each member of the group to discuss, improve and organize work.
5. Check the availability of all the necessary items before going on field.
6. Help workers to solve the problems they encounter in dealing with respondents who are not responsive to questions or refuse to be interviewed.
7. Manage the team's work schedule, including tracking questionnaires completed in the field, questionnaires assigned to the data entry team, and questionnaires that require correction by interviewers.
8. Make sure all the big farmers are identified and surveyed.
9. Communicate with NISR/MINAGRI staff, regarding field issues, as necessary.

He/she was responsible for helping the interviewers to identify the segments and tracts that have been allocated to them, resolving any problems with reluctant operators observing interviews and making checks by visiting the operators after the survey to verify data.



## Data Processing

### Data Editing

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Data editing took place at different stages. First, the filled questionnaires were repatriated at NISR for office editing and coding before data entry started. Data entry of the completed and checked questionnaires was undertaken at NISR offices by trained 20 staff members using CPro software. To ensure appropriate matching of data in questionnaires and plot area measurements from the GIS unit, a LOOKUP file was integrated in the CPro data entry program to confirm the identification of each Agricultural Operator/LSF before starting data entry. Thereafter, data was entered in computers, edited and summarized in tables using SPSS software.

## Data Appraisal

### **Other forms of Data Appraisal**

All farm questionnaires were subjected to two/three rounds of data quality checking. The first round was conducted by the enumerator and the second round was conducted by the team leader to check if questionnaires had been well completed by enumerators. And in most cases, questionnaires completed by one enumerator were peer-reviewed by another enumerator before being checked by the team leader.