

Data driven management of small scale farmers

Improving the
productivity and
profitability of small
scale agriculture
through agricultural
certification and
market linkage

How to manage value
chain initiatives
involving large
numbers of small
scale farmers?

Data driven management of small scale farmers

Improving the
productivity and
profitability of small
scale agriculture
through agricultural
certification and
market linkage

How to ***Initiate and
Scale*** value chain
initiatives involving
large numbers of
small scale farmers?

*Made possible by
recent advances
in technology*

-
- Increased availability of low-cost Android smartphones, which can be used for both data collection and dissemination of information for each farmer and for all
 - Internet cloud computing that facilitates mobile collection, processing and sharing of data with partners
-

*A new way of
conceiving,
developing, piloting
and
scaling value chain
initiatives accross
rural Africa.*

-
- Smartphones for data collection and on the spot management controls
 - Internet platform for sharing data with partners
-



YOUTH

DIGITALISATION

GENDER

CLIMATE

EVENTS

PROJECTS

IMPACT

SDGS

THE DIGITALISATION OF AFRICAN AGRICULTURE REPORT

The Digitalisation of African Agriculture Report, 2018-2019

"Digitalisation is crumbling all sorts of borders and African agriculture will be deeply impacted. Technologies can help stimulate innovation for sustainable agri-food systems and produce better and safer food while preserving natural resources and biodiversity. But we need to be conscious and support solutions that are sustainable and that are tailored to countries' needs, and embedded into conducive and broader innovation systems." Leonard Mizzi, Head of Unit at the European Commission, DG for International Cooperation and Development



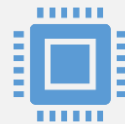
Seasonal Workflow



1. Definition of agricultural data needs together with partners in the value chain for on the spot management controls and agricultural certification



2. a) Initial registration of the agricultural fields of the farmers
b) Repeated data collection throughout the agricultural seasons from the same agricultural fields

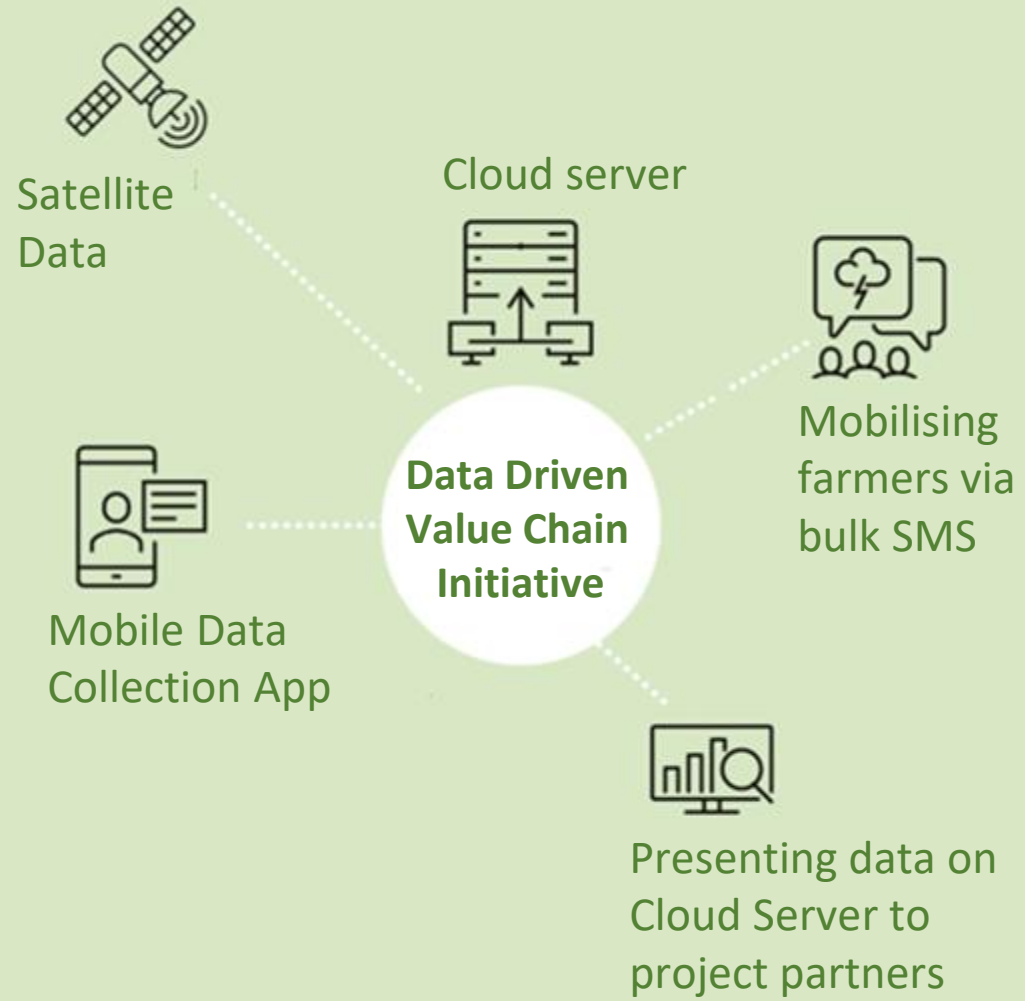


3. Processing of the data collected relying on standard off the shelf digital mapping software



4. Supplying real time data and analyses on an internet cloud server to the partners in the value chain in the form of digital maps, tables and graphs.

Digital tool box



All data collected can be accessed by project partners via smart phone or computer

In the form of:

- Digital maps
- Tables with field level data and photo documentation

The idea is that:

In order to be able to successfully scale any innovation in the area of Value Chain Development of small scale farmers it must first pass the stage of rigorous on farm testing.

















*The increased transparency resulting from the collection and real time sharing of data and analyses, **that can be trusted**, will strengthen the relationship and the trust between partners.*

This will create an increased momentum towards reaching the goals of the project.

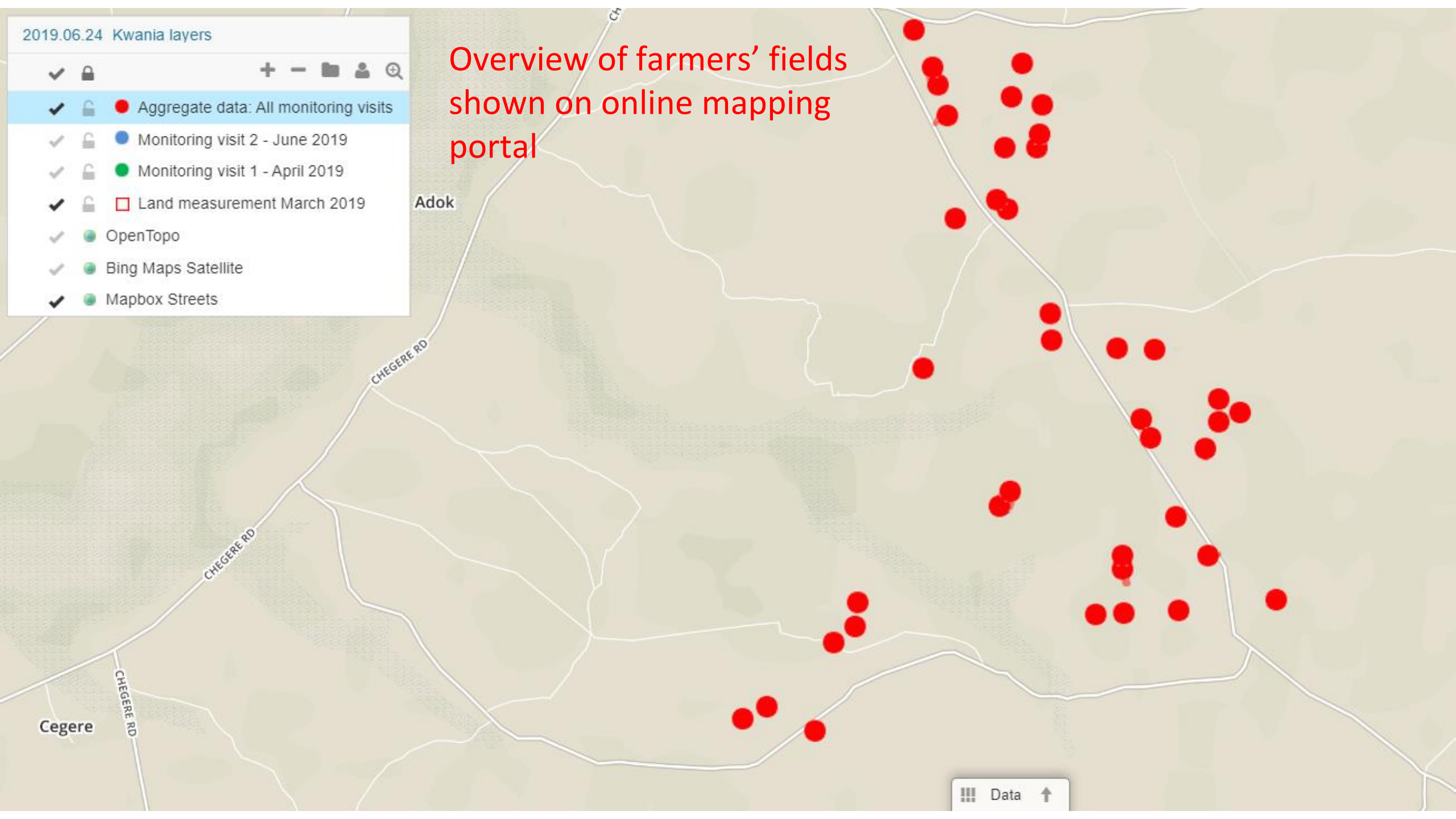
Screen Shot Examples from Pilot Project in Kwania District, Uganda
















3D satellite photo with farmers' fields



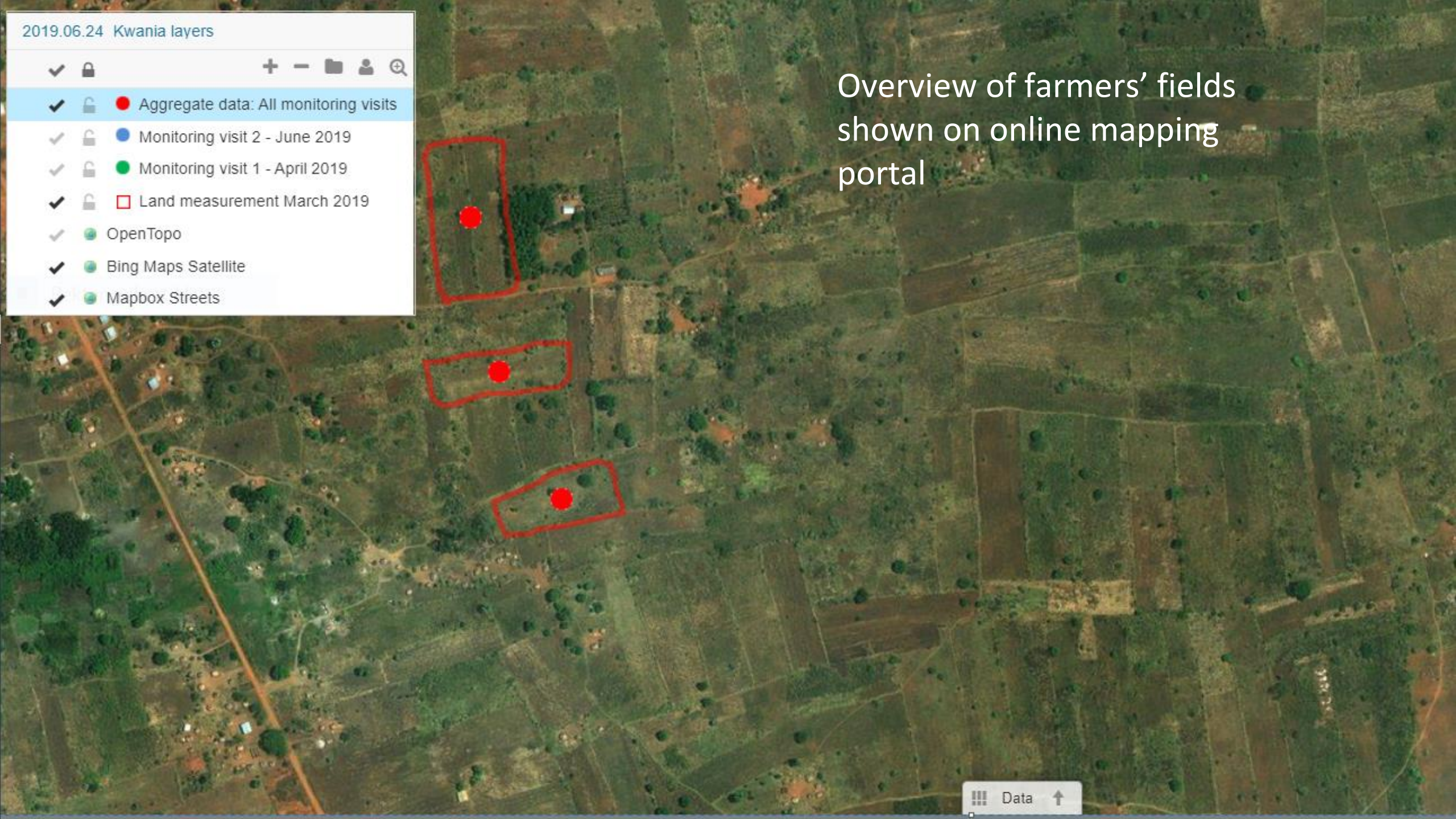
- ✓  + - 
- ✓   Aggregate data: All monitoring visits
- ✓   Monitoring visit 2 - June 2019
- ✓   Monitoring visit 1 - April 2019
- ✓   Land measurement March 2019
- ✓   OpenTopo
- ✓   Bing Maps Satellite
- ✓   Mapbox Streets

Overview of farmers' fields shown on online mapping portal



- ✓  + -   
- ✓   Aggregate data: All monitoring visits
- ✓   Monitoring visit 2 - June 2019
- ✓   Monitoring visit 1 - April 2019
- ✓   Land measurement March 2019
- ✓  OpenTopo
- ✓  Bing Maps Satellite
- ✓  Mapbox Streets

Overview of farmers' fields shown on online mapping portal



Overview photo from one farmer's field shown on online mapping portal

The screenshot displays an online mapping portal interface. On the left, a layer list for '2019.06.24 Kwania layers' is visible, including 'Aggregate data: All monitoring visits', 'Monitoring visit 2 - June 2019', 'Monitoring visit 1 - April 2019', 'Land measurement March 2019', 'OpenTopo', 'Bing Maps Satellite', and 'Mapbox Streets'. Below the layer list is a table with the following data:

Soybeans	MK soybeans	2019-04-17	no	
Soybeans	MK soybeans	2019-04-15	yes	2
Soybeans	MK soybeans	2019-04-10	yes	2
Soybeans	MK soybeans	2019-04-15	yes	2

The central part of the image shows a photograph of a field with rows of green soybean plants and a dirt path. To the right, a satellite map view shows the same field with red rectangular outlines and red dots indicating monitoring points. The map is labeled 'Bing Maps Satellite © Microsoft Corporation'.

Close-up photo from one farmer's field shown on online mapping portal

2019.06.24 Kwania layers

- Aggregate data: All monitoring visits
- Monitoring visit 2 - June 2019
- Monitoring visit 1 - April 2019
- Land measurement March 2019
- OpenTopo
- Bing Maps Satellite
- Mapbox Streets

FID	uniquefid	mobile_pho	name_of_fa	gender	
OKII GEOFFREY	0.5	1.2	Soybeans	MK soybeans	20
OGWANG RAY...	1.3	3.2	Soybeans	MK soybeans	20
OKII MARTIN	1.6	4.1	Soybeans	MK soybeans	20
OCULL JASSIN	0.6	1.5	Soybeans	MK soybeans	20




ps Satellite © Microsoft Corporation

titude	accuracy	area_ha	_1_plantin	_1_seedvar	_1_o
3	06/22/2019 12...	mdc_photo_...	mdc_photo_...	mdc_photo_...	
3.091	06/23/2019 3:...	mdc_photo_...	mdc_photo_...	mdc_photo_...	
3	06/22/2019 11...	mdc_photo_...	mdc_photo_...	mdc_photo_...	
3	06/23/2019 2:...	mdc_photo_...	mdc_photo_...	mdc_photo_...	

Farmers' fields and data shown on online mapping portal



Example of bulk pdf-photo reports showing multiple photos from farmers' fields

#	FID	_1_cropcon	_1_inrowph	_1_closeup	_2_overvie	_2_inrow	_2_closeup
8	41	4					
9	47	3					
10	48	4					

Example of simple analytical table that can be shared with project partners

Characteristics of farmers' fields

Avg. area per field in acres	1,58
Max. area per field in acres	5,40
Min. area per field in acres	0,70
Total number of fields	48,00
total area in acres	76,00

Distribution of crops end of season (number of fields)

Crops grown at end of season

Crop condition at end of season	Beans	Cassava	Sunflower	Cotton	Groundnuts	No crop	Maize	Soybeans	Null	Grand Total
Null									8	8
2 - poor	1					5				6
3 - average						1				1
4 - good	2	3	3	2	2		11	4		27
5 - very good			1	1				4		6
Grand Total	3	3	4	3	2	6	11	8	8	48

Area distribution of crops end of season (acres)

Crops grown at end of season

Crop condition at end of season	Beans	Cassava	Sunflower	Cotton	Groundnuts	No crop	Maize	Soybeans	Null	Grand Total
Null									16,10	16,10
2 - poor	1,10					8,00				9,10
3 - average						1,10				1,10
4 - good	2,30	3,70	3,10	3,70	6,50		13,70	3,80		36,80
5 - very good			1,30	1,60				10,00		12,90
Grand Total	3,40	3,70	4,40	5,30	6,50	9,10	13,70	13,80	16,10	76,00