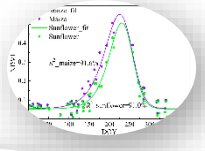
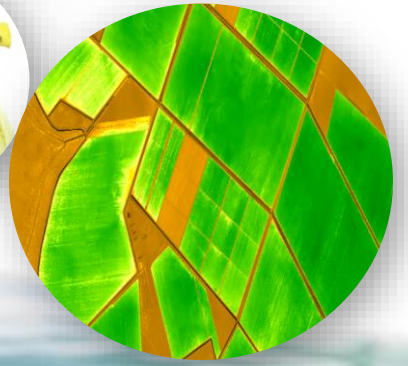
UNITED NATIONS
Office for Outer Space Affairs

USE OF DRONES IN CROP INSURANCE





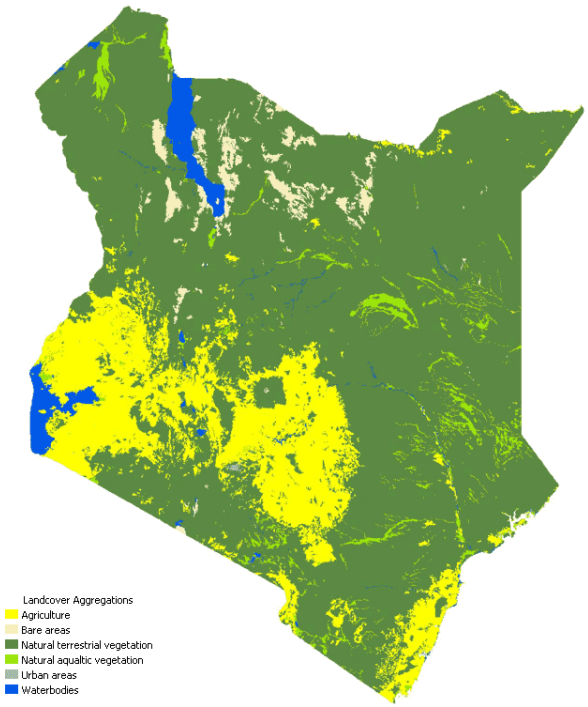
CASE → MAIZE
(Small Scale Farmers)

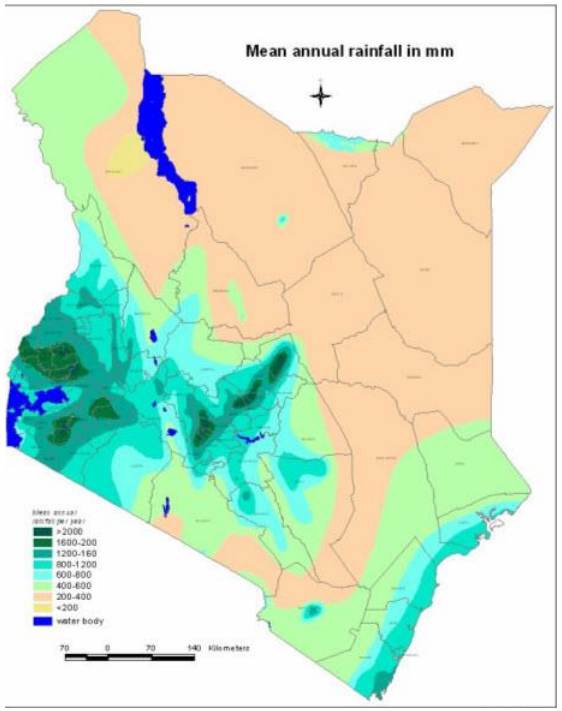
Accadius Ben Sabwa
M.D

Davacc Tech
Implementing Future Technologies, Today!

Objectives

- Crop Acreage Estimation
- Crop Monitoring/Mitigations
- Yield Forecasting
- **Crop Insurance**





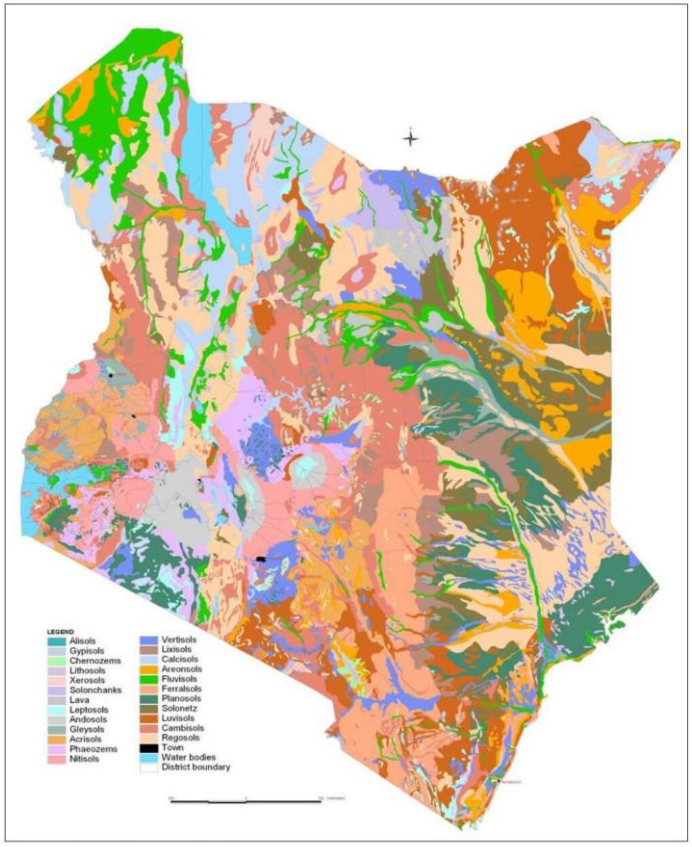
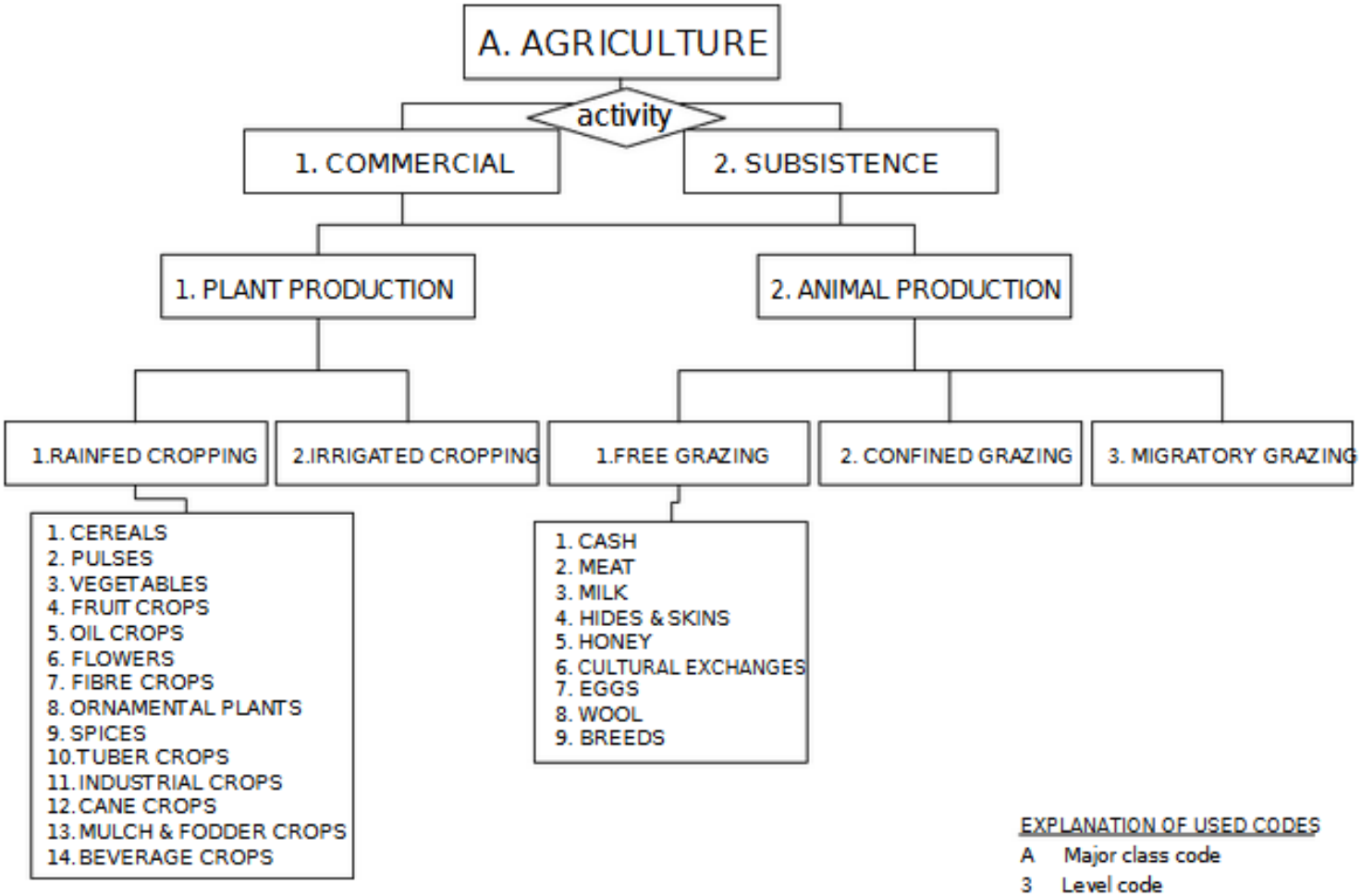


Figure 2: Major soils in Kenya


A. AGRICULTURE
activity
1. COMMERCIAL
2. SUBSISTENCE
1. PLANT PRODUCTION
2. ANIMAL PRODUCTION
1.RAINFED CROPPING
2.IRRIGATED CROPPING
1.FREE GRAZING
2. CONFINED GRAZING
3. MIGRATORY GRAZING
1. CEREALS
2. PULSES
3. VEGETABLES
4. FRUIT CROPS
5. OIL CROPS
6. FLOWERS
7. FIBRE CROPS
8. ORNAMENTAL PLANTS
9. SPICES
10.TUBER CROPS
11. INDUSTRIAL CROPS
12. CANE CROPS
13. MULCH & FODDER CROPS
14. BEVERAGE CROPS
1. CASH
2. MEAT
3. MILK
4. HIDES & SKINS
5. HONEY
6. CULTURAL EXCHANGES
7. EGGS
8. WOOL
9. BREEDS
EXPLANATION OF USED CODES
A Major class code
3 Level code

Challenges

Small scale farmers pain points

40% Low Crop Productivity

2 X Crop Failures

Why?

Lack of Modern Farming Techniques

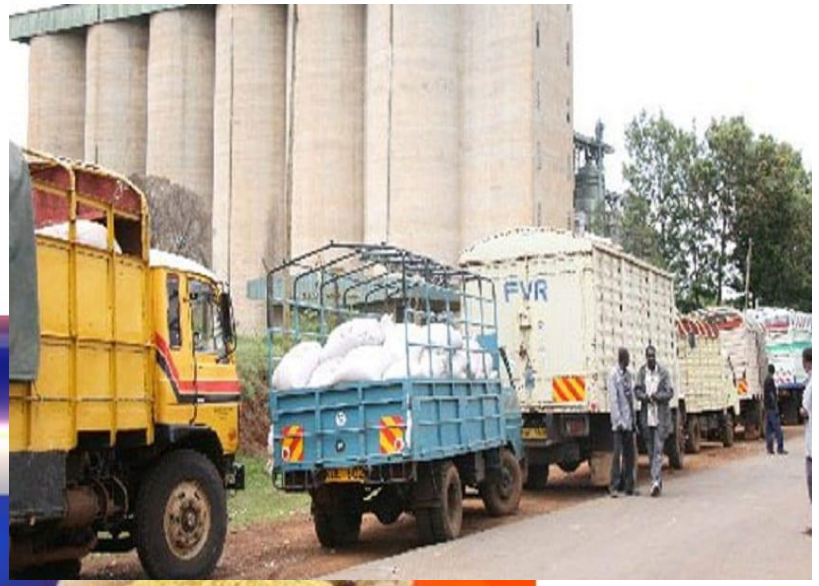
Lack of Access to Technology

No Access To Information

Revealed: How Ksh.17B maize fund was looted at NCPB

By Enock Sikolia For Citizen Digital

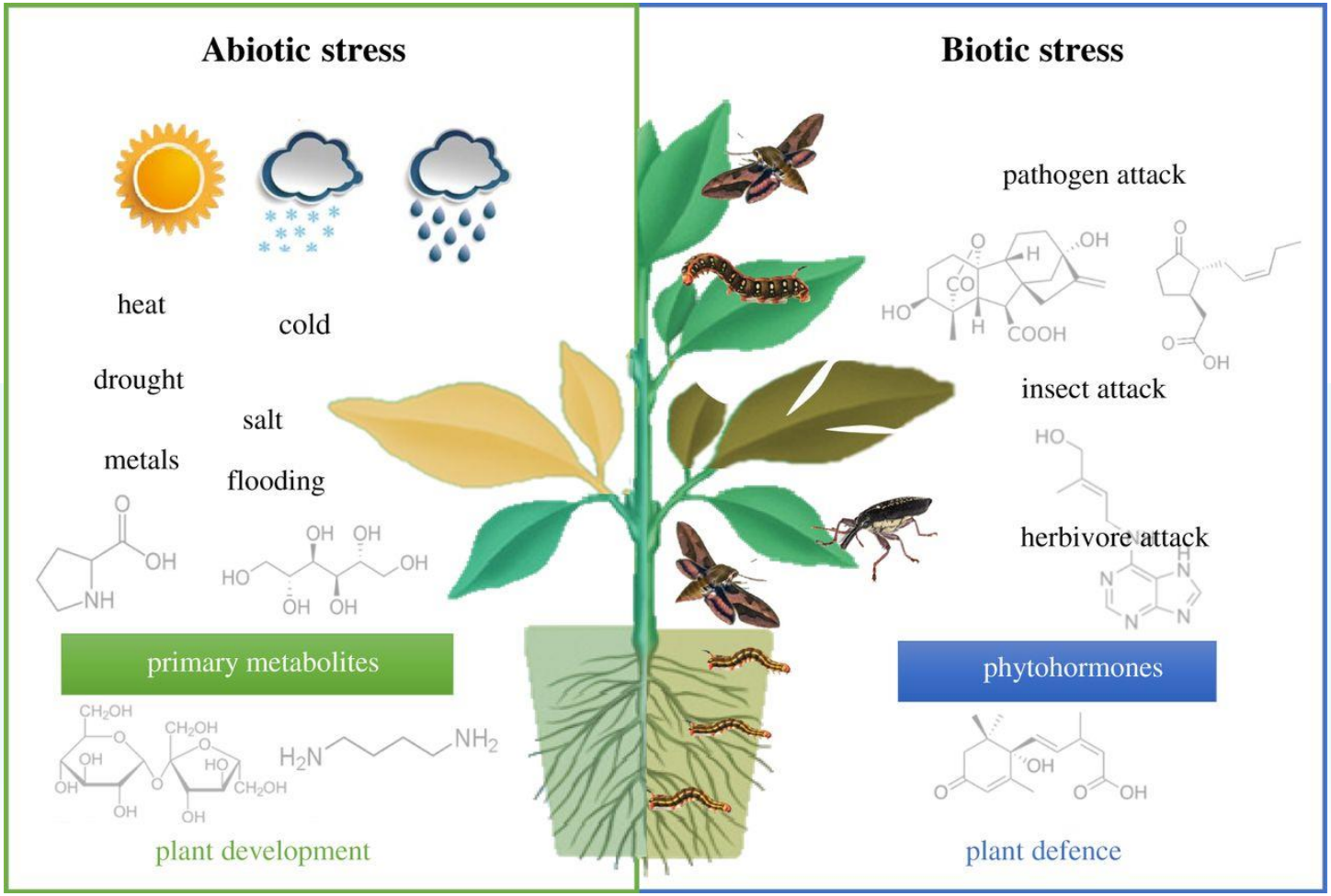
Published on: October 25, 2018 09:32 (EAT)



Sh7bn Galana Kulalu project collapses after Israeli firm leaves

SATURDAY FEBRUARY 23 2019

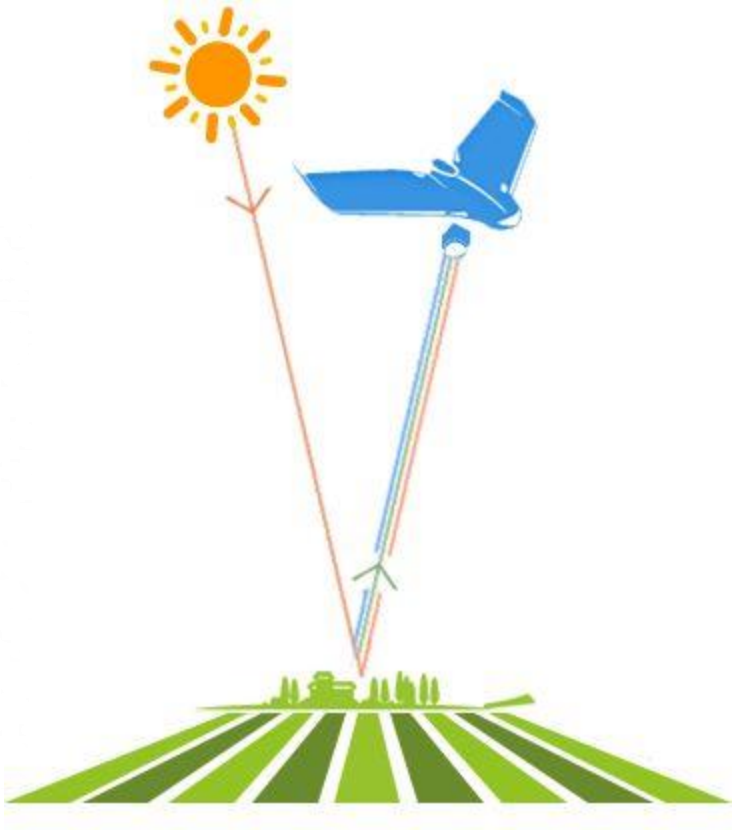
Insurance Vs Mitigation



Insurance factors

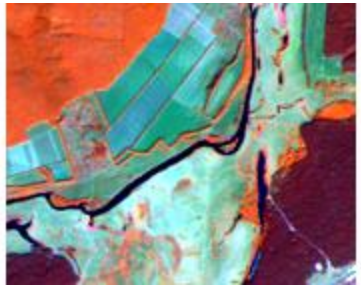
- Planting Methods
- Fertilizer Vs Organic Vs nothing
- Irrigation Vs Rain
- Pesticide/Herbicide Application

Technology : Segments



Role of Drones : Classification

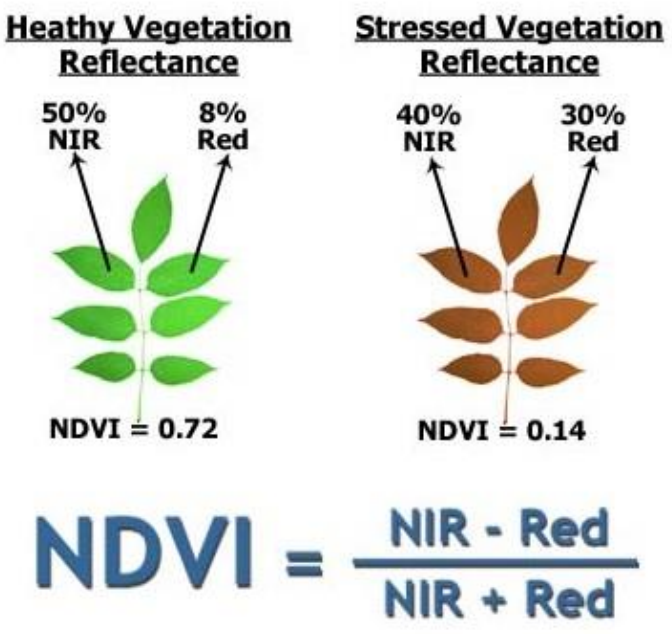
- Supervised/Knowledge based
- Calibration/Ground Truthing
- Acreage estimation and
  Area(s) of operation

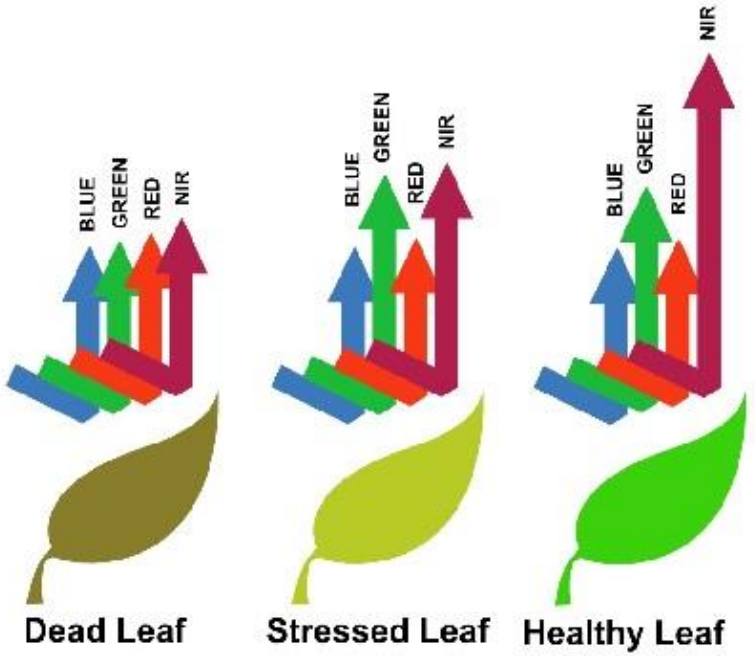


	Bands	Wavelength (micrometers)	Resolution (meters)
Landsat 8 Operational Land Imager (OLI) and Thermal Infrared Sensor (TIRS) **Launched February 11, 2013**	Band 1 - Coastal aerosol	0.43 - 0.45	30
	Band 2 - Blue	0.45 - 0.51	30
	Band 3 - Green	0.53 - 0.59	30
	Band 4 - Red	0.64 - 0.67	30
	Band 5 - Near Infrared (NIR)	0.85 - 0.88	30
	Band 6 - SWIR 1	1.57 - 1.65	30
	Band 7 - SWIR 2	2.11 - 2.29	30
	Band 8 - Panchromatic	0.50 - 0.68	15
	Band 9 - Cirrus	1.36 - 1.38	30
	Band 10 - Thermal Infrared (TIRS) 1	10.60 - 11.19	100
	Band 11 - Thermal Infrared (TIRS) 2	11.50 - 12.51	100

Sentinel-2 Bands	Central Wavelength (µm)	Resolution (m)
Band 1 - Coastal aerosol	0.443	60
Band 2 - Blue	0.490	10
Band 3 - Green	0.560	10
Band 4 - Red	0.665	10
Band 5 - Vegetation Red Edge	0.705	20
Band 6 - Vegetation Red Edge	0.740	20
Band 7 - Vegetation Red Edge	0.783	20
Band 8 - NIR	0.842	10
Band 8A - Vegetation Red Edge	0.865	20
Band 9 - Water vapour	0.945	60
Band 10 - SWIR - Cirrus	1.375	60
Band 11 - SWIR	1.610	20
Band 12 - SWIR	2.190	20

NDVI/NDMI Score

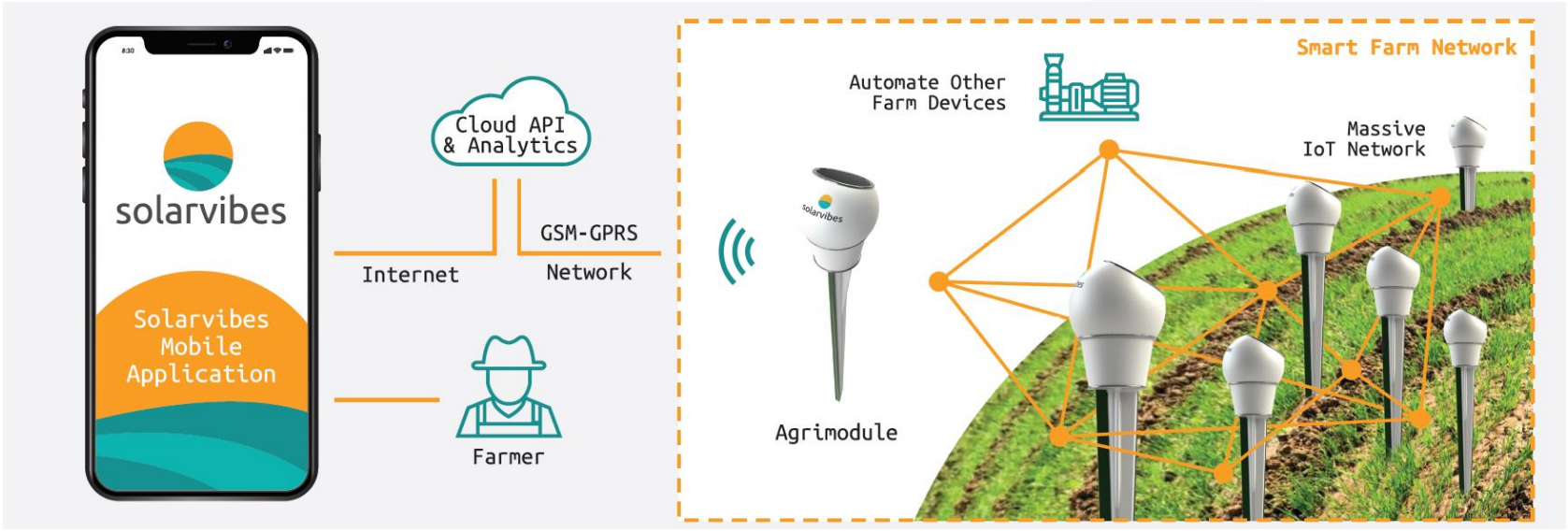


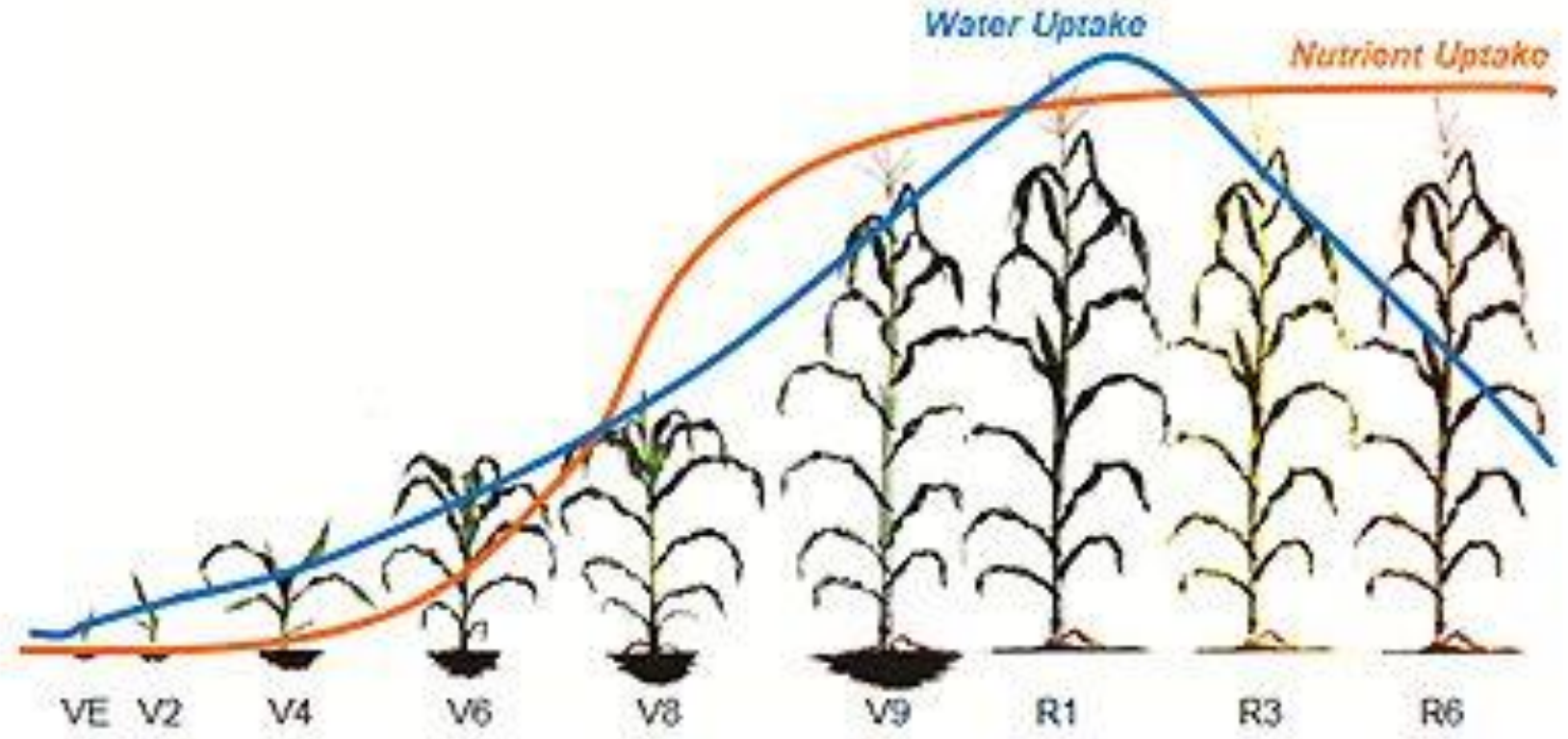


Role of Ground Segment

Agri Module Smart System

Solar-powered & energy-efficient smart wireless sensor that monitors weather, soil and crop parameters 24/7.




Water Uptake
Nutrient Uptake
VE
V2
V4
V6
V8
V9
R1
R3
R6

Davacc Tech
Implementing Future Technologies, Today!

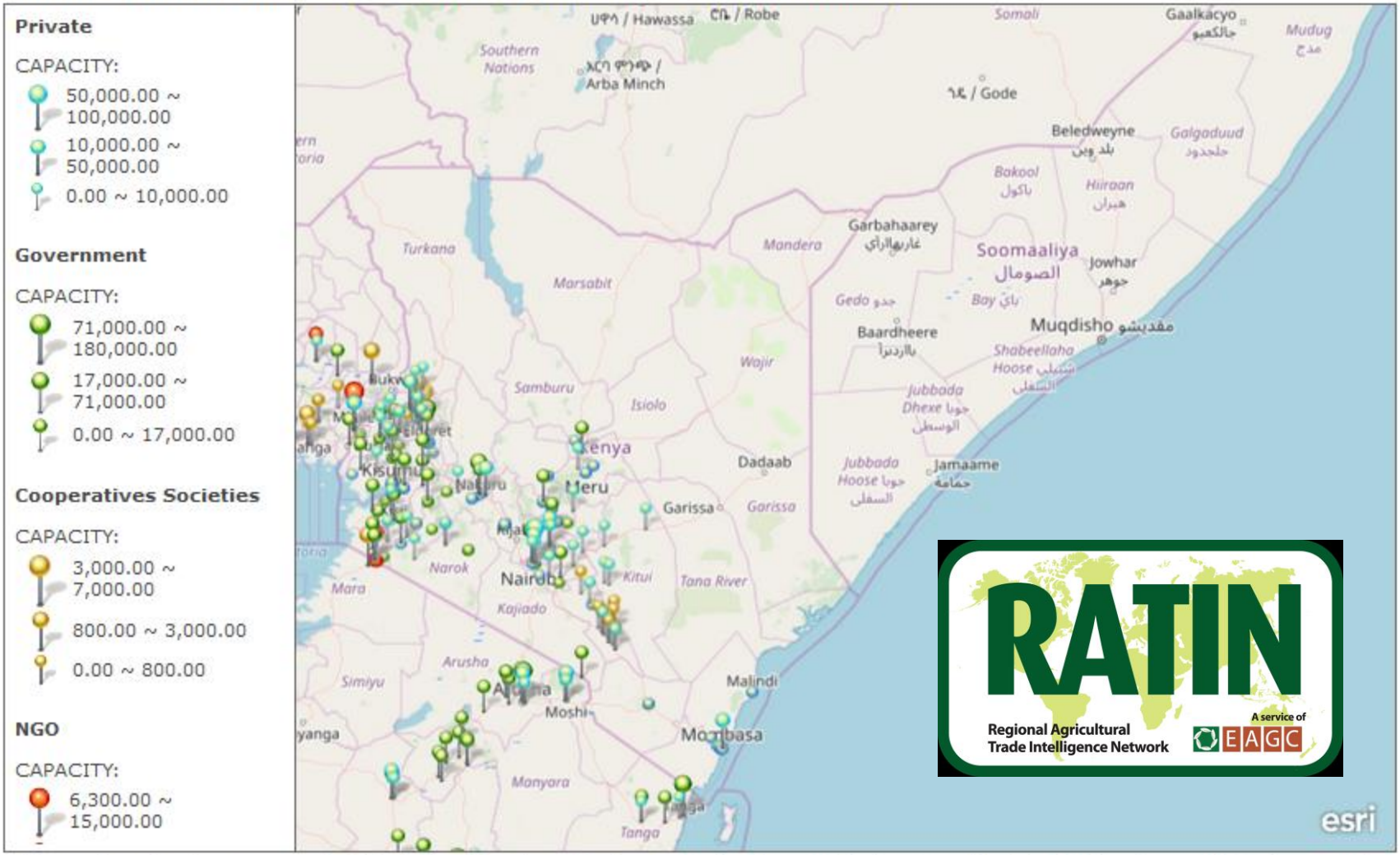
Yield Forecasting

Several methods can be used to determine yield potential, each with its own limitations. One of the most reliable methods is long-term yield data collected by each individual producer, as this reflects inherent yield of the specific environment, as well as the effect of agronomic practices such as fertilisation, soil cultivation and plant population and managerial abilities of the producer.

Water

Approximately 10 to 16 kg of grain are produced for every millimetre of water used. A yield of 3 152 kg/ha requires between 350 and 450 mm of rain per annum. At maturity, each plant will have used 250 ℓ of water in the absence of moisture stress.

GRAIN STORAGE FACILTIES EASTERN AFRICA INCLUDING MALAWI



This map is made of 710 storage facilities in the following countries :Kenya(185), Uganda(73), Tanzania(81), Malawi(310), Rwanda(51) , Burundi (7)and Democratic Republic of Congo-DRC (1).

Thank You

+254 724 008039

sabwa@davacc.com

solarvibes

Voice Of Your Soil

Presented By,
Swathish Bellam Ravi
USAMV Cluj Napoca, Romania
08/05/2019

The Problem

Small farmers pain points

40% Low Crop Productivity

2 X Crop Failures

Why?

Lack of Modern Farming Techniques

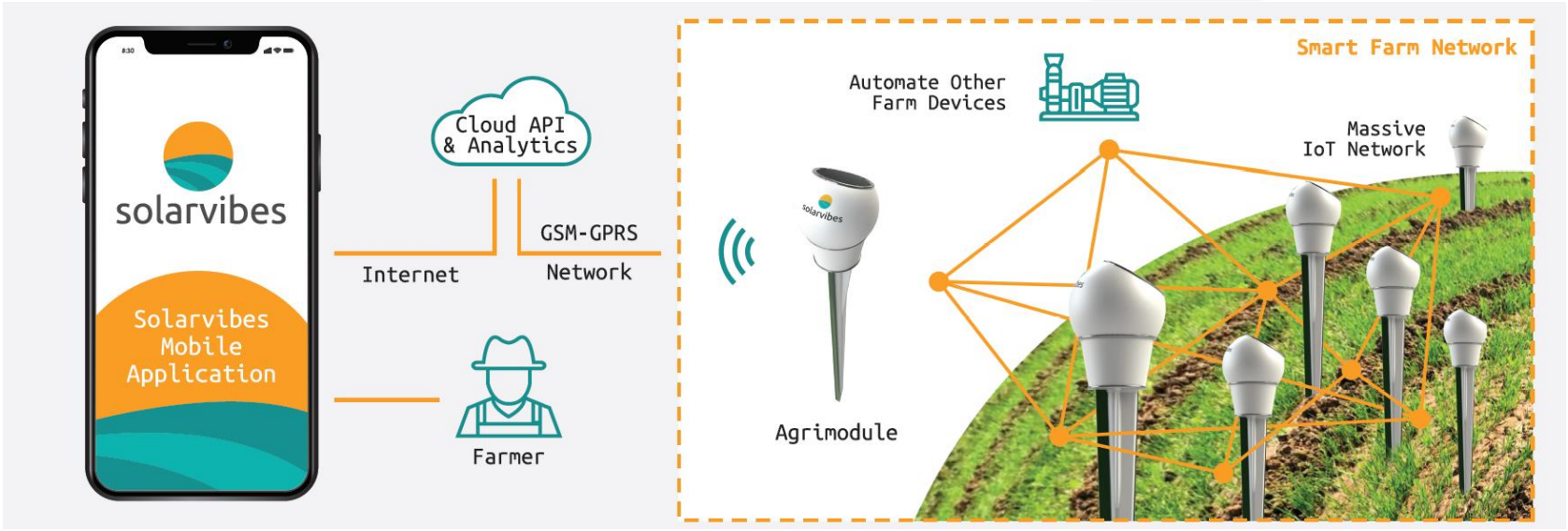
Lack of Access to Technology

No Access To Information

The Product

Agri Module Smart System

Solar-powered & energy-efficient smart wireless sensor that monitors weather, soil and crop parameters 24/7.



Improved Version

Measures:

Air Temperature, Humiditiy and Pressure
Solar Irradiance
Location
Soil Nutrient- NPKM
pH
Organic Carbon and Type of Soil
Electrical Conductivity
Soil Temperature and Soil Moisture

Vaiables in Pipeline:

Boron
Arsenic
Wind-Speed

Version 2.0

So, What we do?

We enable farmers with Instant and Real-Time access to crop and soil health Diagnostics.

Our solution aims to be the foundation of all future farming services.

Our Innovation

Vibes Protocol

Next-Gen Artificial Intelligence (AI) based crop intelligence software.

Our Competitive Advantage

- First of its kind FMIS
- Scalability protocols
- Advanced AI and CV
- Robust and Novel Sensors

Validation

Survey - 400 Farmers in India, Africa and Eastern Europe
Paid testbed providers - 2000 Hectares farm land across Romania, Hungary and Germany

Partnerships

Agriculture Universities

Electric, Solar and Diesel Manufacturers

Renowned Research Institutions

Crowdfunding campaign & Initial customers

Pre Orders & Pilot Projects – Over 5000 devices across EU

>500K Euro raised through crowdfunding and EU Grant

Market Potential

Small- Medium Farmers

0,1 to 50 ha

Initial target

330,000 farms
150 million €
(farmer age group-35 to 45, easy to train, bigger communities, etc.)

Attractive segment

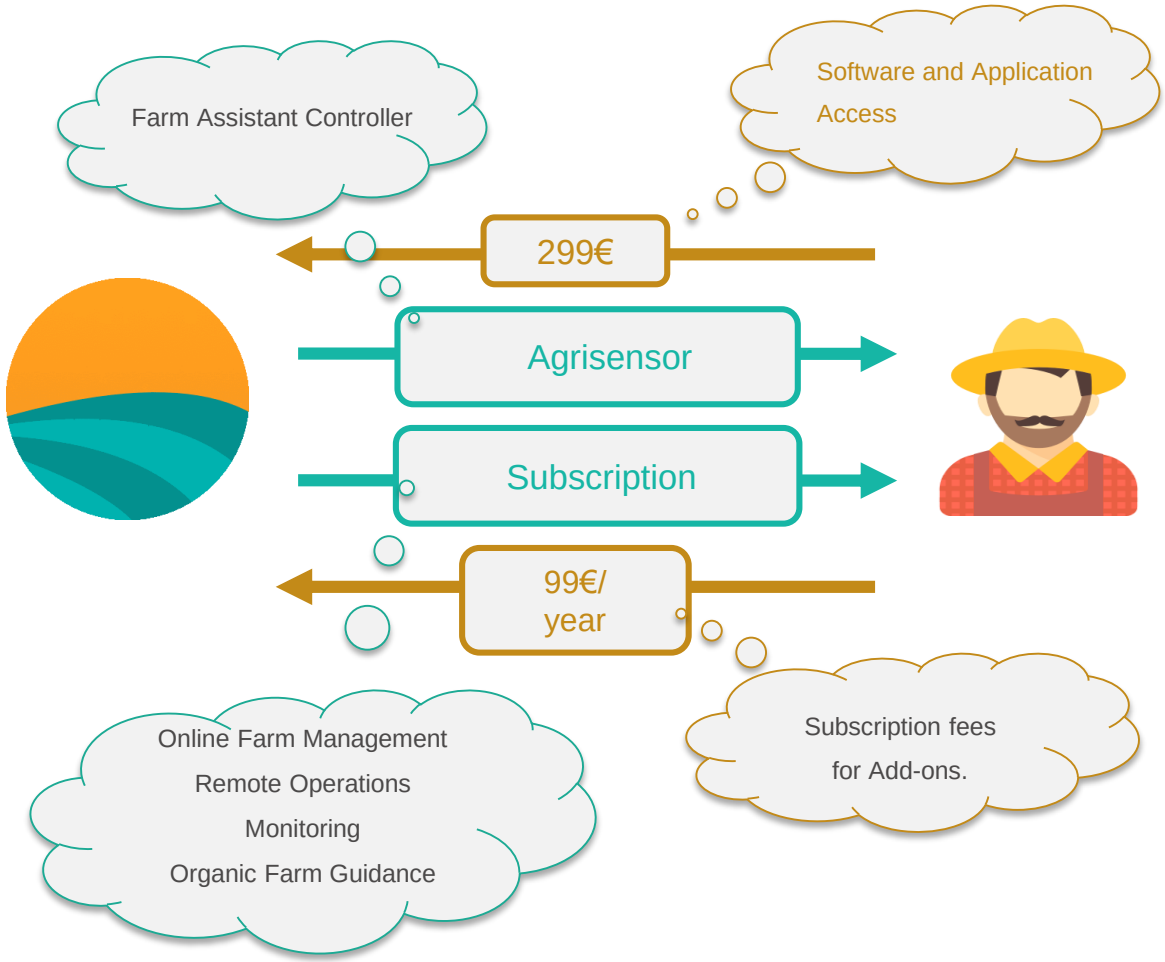
610,000 farms
330 million €
(Access to smartphones, medium & higher income group farmers)

Addressable Market Segment

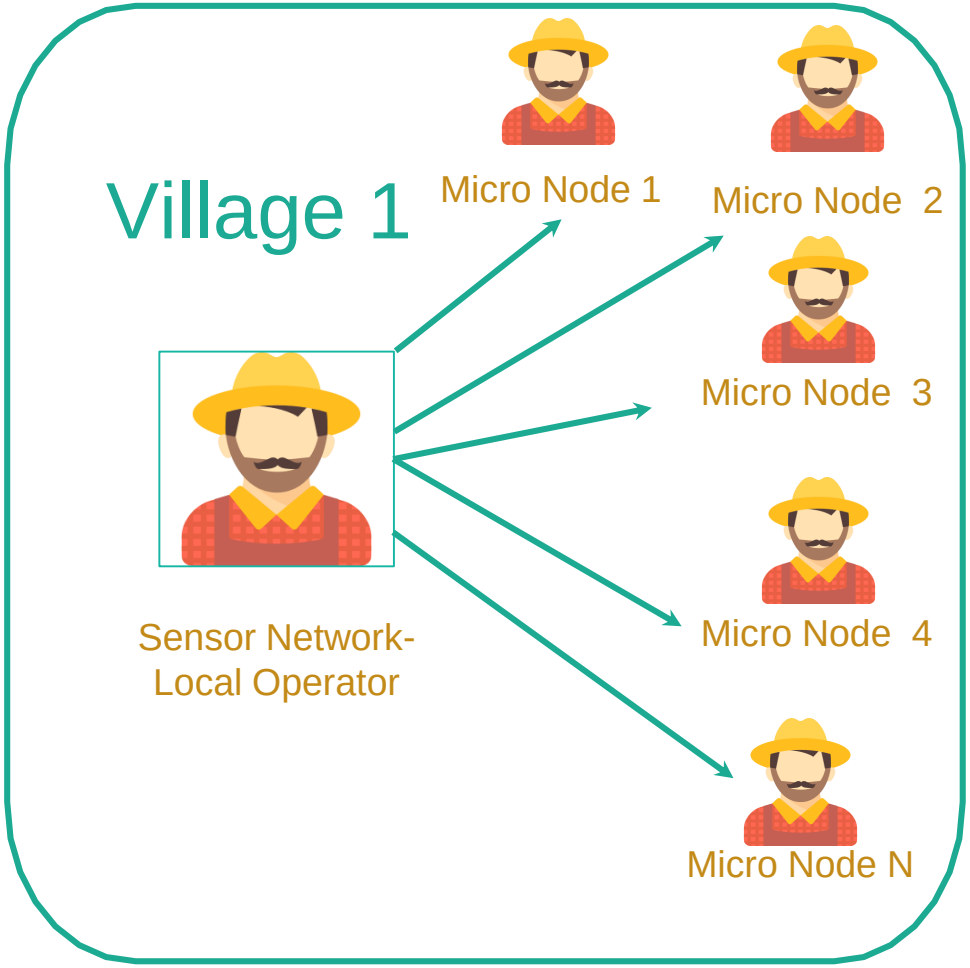
1,205,000 farms
605 million €
(Severe problems of crop failures, lack of easy access to soil testing facilities)

Business Model

Direct Sale
Product Price



Community Model



Solarvibes unveils the scalability potential of IOT in Agriculture

- Connects all the farm devices to one dashboard.
- Every Network will have 1 master operator
- Master Farmer get a small fee for operating the Network
- Farmers can monetize data by sharing their results on their network
- All farmers can monitor and control their farms independently
- We can connect upto 10,000 devices and 20,000 farmers in one network

Adopt A Farmer

Our Vision is to empower farmers and lead the transition towards tackling the biggest problem of the century, “The Energy-Water-Food” nexus.

Thank You

www.solar-vibes.com
+4917686787837
swathish@solar-vibes.com