

A person wearing a blue and red plaid shirt is shown from the chest down, holding a bundle of green rice stalks in their right hand and a white tablet in their left hand. They are standing in a lush green rice field. The background is slightly blurred, showing more rice plants. A large blue semi-circular graphic element is on the left side of the image, containing the title and subtitle text.

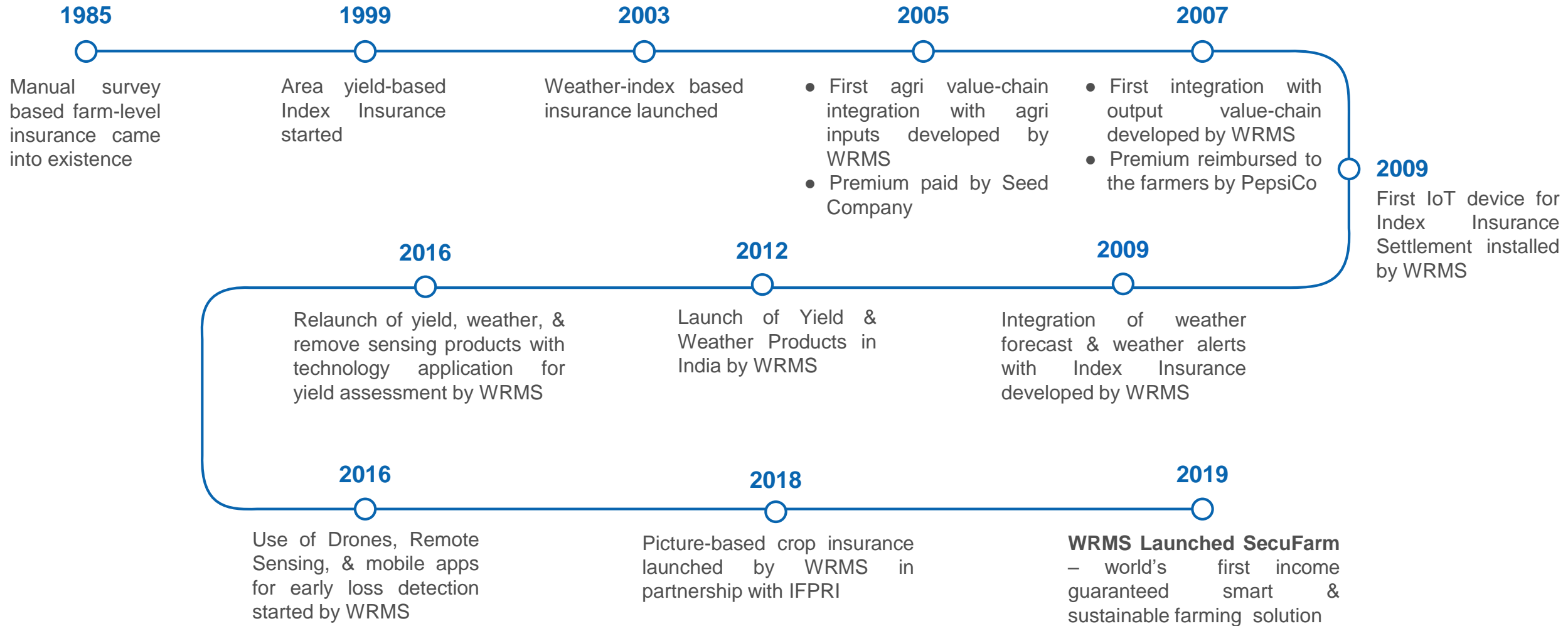
WRMS Crop Risk Management Solutions

Income Security & Sustainable Farming Solutions for Smallholders

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Crop Risk Management journey

How the crop insurance product has evolved



About WRMS

WRMS is a pioneer in Smart & Sustainable Farming in India

We leverage **information communication technology & financial innovation** to help farmers **enhance farm productivity**, gain a **guaranteed income**, and practice **sustainable farming**

2004

Year Of Foundation

10,000 +

IoT Sensors Installed

15 +

Country Presence

1 million +

Farmers Bailed Out From
Natural Disasters

INR 285 million

Gross Annual Turnover
(FY 2018-19)

2000 +

On-ground Surveyors

2.5 million +

Farmers Served

INR 162.5 million

Total Funding Received

350 +

Number Of Employees

Our Purpose

Empowering our farmers to overcome
the most daunting agrarian challenges



Our Capabilities

Multidisciplinary capabilities spanning data
analytics, technology & finance to address
complex agrarian challenges



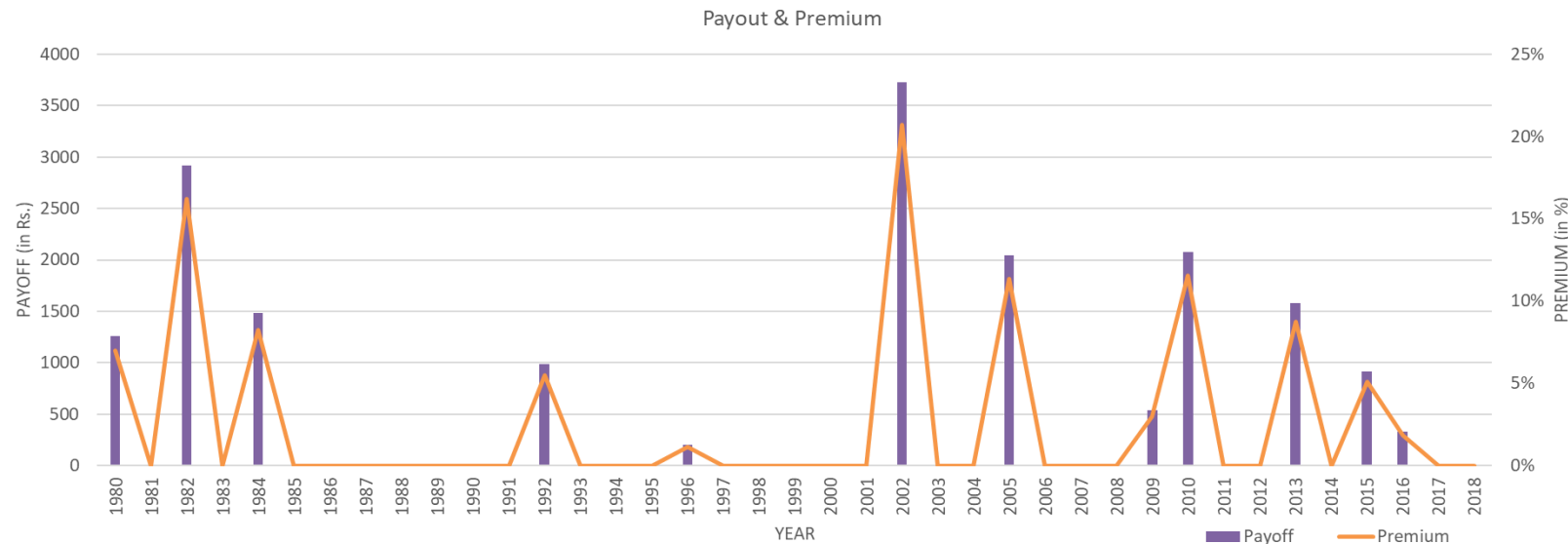
Our Values

Staying Constantly Curious, Never Giving
Up, Winning Together, Not Misleading,
Respecting People



Sample Product Design

Crop	Paddy		
Location	Khajauli and Rajnagar Blocks, Madhubani District		
Index	Total Amount of Rainfall less than Strike		
Date From	15-Jul	01-Aug	01-Sep
Date to	31-Jul	31-Aug	30-Sep
Payout Begins at (mm)	65	125	75
Max Payout at (mm)	0	0	0
Payout Rate (Rs. / mm)	60.0	62.4	84.0
Max Payout (Rs.)	3900.0	7800.0	6300.0



- Simple Drought Index covering risks related to lack of rainfall
- Graph below gives frequency of payout
- Cover design based on risk perception
- Transparent mechanism to give farmer information on payout frequency
- Can be offered as cashback to farmers on purchase of Bayer product

Viability of micro-insurance

in partnership with **Ford Foundation & International Labour Organization**

We started **CARM services** in India in 2009 with support from **Ford Foundation & International Labour Organization (ILO)**. The services now cater to **more than 20,000 farmers** across the country

Business Case	What we did	Impact
Comprehensive agriculture risk management (CARM) solutions for farmers in East India	<ul style="list-style-type: none">• As part of the CARM package insurance, mobile based agro-advisory service and irrigation controllers were provided• Farmers used agro-advisory services and irrigation management systems as preventive risk management measures• Insurance was used to manage catastrophic risks• Risk management package also facilitated bank loans to the farmers	Demonstrated that micro-insurance for small scale farmers can be made commercially viable and sustainable by clubbing it with other risk management services



SecuFarm

Income Guaranteed Smart & Sustainable Farming Solution

- SecuFarm; *What is it?*
- How Farmers experience SecuFarm
- How WRMS enables it at the back-end

SecuFarm

Farm-level solution empowering farmers

to increase agricultural productivity by guaranteeing return on investment



Increased Agricultural Productivity

YIELD MAXIMIZATION

- **Provide Y-o-Y increase in yield** through Smart Farming using IoT, Mobile Apps, Machine Learning & AI, Drones, GIS, & Telematics



Income Protection

CROP LOSS COMPENSATION

- **Assure minimum income guarantee** by covering risks due to unforeseen natural calamities through **Financial Innovation**

PRICE MAXIMIZATION

- **Facilitate farming of crops that command higher market price** through Smart & Sustainable Farming
- **Identify the best price for the crops** using Market Linkages

***Size-agnostic Solution**

Applicable to farms of all sizes

Secufarm Experience



BACKGROUND

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ABOUT US

POTATO YIELD MANAGEMENT AND ASSURANCE SERVICES –TERMSHEET

PURPOSE

- WRMS will provide farm advisory and technical assistance (details in annexure) to improve farm yield
- In case the actual farm yield turns out to be lower than the promised level due to incorrect technical assistance, error and/or negligence, WRMS will compensate for the cost incurred by the farmer in proportion to shortfall in the farm yield vis-à-vis the promised level subject to other terms and condition stated below

LAND DETAILS

Land Record Details, Address

- Farmers located in Bankura, Midnapore, and Hooghly
- GP & Block list given in Annexure IV

CROP

with Variety Details

- **Crop:** Potato
- **Variety:** Atlanta (FC-3)
- **Date of Sowing:** 30 October (+7 days) | **Date of Harvesting:** 90-110 Days after Sowing

MAXIMUM LIABILITY

- **On Per Farm basis**
- **Max (Yield Shortfall* Cost C2 ,0); where**
- **Yield Shortfall = (Yield Threshold- Actual yield)/ Yield Threshold**
- **Yield Threshold:** 8,000 kg/acre
- **Cost of Cultivation (Cost C2)**
= INR 40,000 per acre

FEES

for Assurance & Technical Service

- 10% of the Cost of Cultivation

CLAIM CALCULATION

Example

- **Actual Yield:** 7,000 kg/acre
- **Yield Shortfall=** (8000-7000) / 8000 = 12.5%
- **Compensation =** (12.5% *40000) = INR 5,000 per acre

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TERM-SHEET

CRITICAL STEP	INCENTIVE increase in Threshold Yield (kg / acre)	DOCUMENTS REQUIRED
SOIL TREATMENT	200	<ul style="list-style-type: none"> • Bill or purchase receipt of the recommended chemical with quantity and price mentioned; Soil Testing can be done to check compliance
SEED TREATMENT & SOWING <i>sowing of recommended seed varieties</i>	300	<ul style="list-style-type: none"> • Bill or purchase receipt of the recommended seed variety with quantity and price mentioned; Farm audits can be done to check if right seeds have been sown
APPLICATION OF FERTILIZER	200	<ul style="list-style-type: none"> • Bill or purchase receipt of the fertilizers with quantity and price mentioned; Soil Test can be done to check compliance
APPLICATION OF PESTICIDE & WEEDICIDE	500	<ul style="list-style-type: none"> • Bill or purchase receipt of the pesticides with quantity and price mentioned; Geo-tagged photograph* of pesticide application in the covered farm through WRMS smart phone application; Pesticide residue test can also be done
FIRST IRRIGATION	500	<ul style="list-style-type: none"> • Satellite imagery or inputs from irrigation switch taken to check compliance

Penalty: 15-30% depending on the critical steps not followed
In case the major critical steps are not followed, policy will be cancelled with prior intimation

*Geo-tagged photograph of in the covered farm is to be sent by the farmer through the WRMS's smartphone application

GEO-TAGGING OF FARMS FOR ACCURATE MONITORING

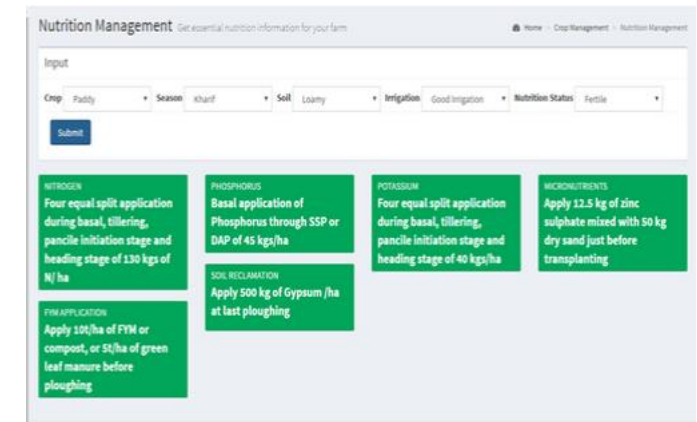
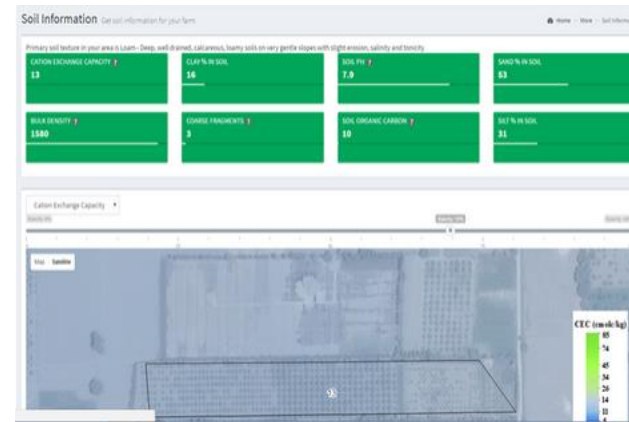
- The Potato farmers were geo-tagged for their fields; precise details of which could be viewed by just hovering over the location on the **Secufarm** mobile application
- Geo-tagging helped in accurate monitoring

The screenshot displays the 'My Farm Info' interface of the Secufarm mobile application. On the left is a dark sidebar with navigation options: 'Current Location' (showing 'kachru bhagwat - sanjay kachru'), 'My Farms' (with a 'Select Farm' dropdown), and 'MAIN NAVIGATION' (including 'Mandi Information', 'Crop Feasibility', 'Crop Management', 'Farm Management', 'Useful Services', 'More', and 'Admin'). The main content area has a green header with a menu icon and a user profile icon. Below the header, there are two dropdown menus for 'Farmers' (selected: 'Sanjay Kachru Bhagwant') and 'Farms' (selected: 'Farm 1'), followed by a green 'Submit' button. The central part of the screen shows a satellite map with 8 green location pins. One pin is labeled 'sanjay kachru bhagwat-14'. To the right of the map is a detailed view of a specific farm, showing a satellite image of a green field and a list of farm details.

8 farms found	
Map	Satellite
[Satellite Map View]	
sanjay kachru bhagwat-14	
[Detailed Farm View]	
Farm Name	sanjay kachru bhagwat-14
Farmer Name	kachru bhagwat
State	Maharashtra
District	Aurangabad
Registration Date	27-Dec-2016 04:31:46 PM
Farm Area	1.07 acres
Farm Coordinates	20.0764, 75.1251
Crop	Gram
Variety	Bharati (ICCV-10)
OtherNutrient	null
Sow Date From	12/1/2016 12:00:00 AM
Sow Date To	5/15/2017 12:00:00 AM

PROVIDING SOIL INFORMATION FOR NUTRIENT MANAGEMENT

- Comprehensive soil information like Cation exchange capacity, clay content, & soil PH, micro and macro nutrients were provided to the farmers
 - Minimum soil tests done after validating Soil Health Card data
- Depending upon the soil report, our agri-experts recommended the farmers a suitable soil treatment and arrange necessary nutrients id requiried by farmers



PROVIDING SOWING ADVISORY ACCESS TO PLANTERS



Mechanized Planter

- Build ridges
- Plant the potato seeds inside the soil



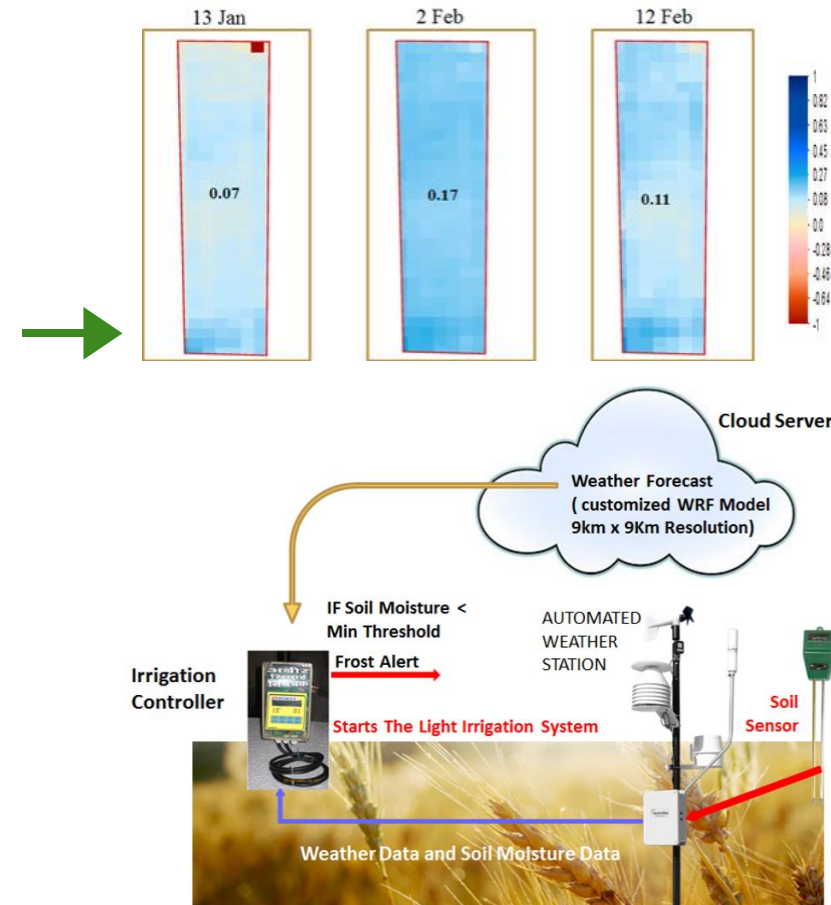
Potato Field Layout

- Track each potato through a **GPS chip & depth detection sensor** attached to the planter

- Based on the soil and weather data, farmers were given treated seeds, including advisory on when to sow, what variety of seed to sow, and how much of water & other inputs are to be used while sowing.
- To assist the sowing activities, farmers were also provided access to **mechanized planters** which not only reduced the farming effort & the time, but also ensured maintaining the appropriate plant-to-plant distance

IRRIGATION MANAGEMENT

- Farmers were given an irrigation schedule
- Soil moisture situation on the Potato farm was monitored (as in the image here) using soil moisture sensor and satellite imagery
- Irrigation systems were switched on using WRMS irrigation switches, in case soil moisture was found to be low at the critical stages of the crop



TECHNICAL ASSISTANCE DURING CROP GROWTH STAGE


- Automated Weather Stations gathered weather data and sent it to our remote server
- Farmers were provided latest weather data and forecasts for temperature, rainfall, humidity and wind
- Data was shared through mobile appl and SMSs in vernacular languages
- Historical weather data was also provided



iNGEN Automatic Weather Station Data

Date	MaxTemp	MinTemp	Rain	HumidityMor	HumidityEve
2017-02-01T00:00:00	20.28	9.09	0	95.77	78.77
2017-02-02T00:00:00	20.68	8.69	0	84.27	61.17
2017-02-03T00:00:00	21.18	8.69	0	87.77	61.37
2017-02-04T00:00:00	25.08	10.99	0.3	72.27	47.97
2017-02-05T00:00:00	19.28	6.9	0	100	74.77
2017-02-06T00:00:00	20.83	6.9	0	57.99	38.59
2017-02-07T00:00:00	22.73	8	0	72.89	36.39
2017-02-08T00:00:00	22.63	8.4	0	49.99	40.29

Sat, 25/03/2017



তোমার এলাকায়
ধস রোগের জন্য
আবহাওয়াটি
উপযুক্ত নয়. দয়া
করে পেপসিকো
কৃষিবিদের দ্বারা
প্রদেয় স্প্রে
তালিকাটি অনুসরণ
করুন।

13:29

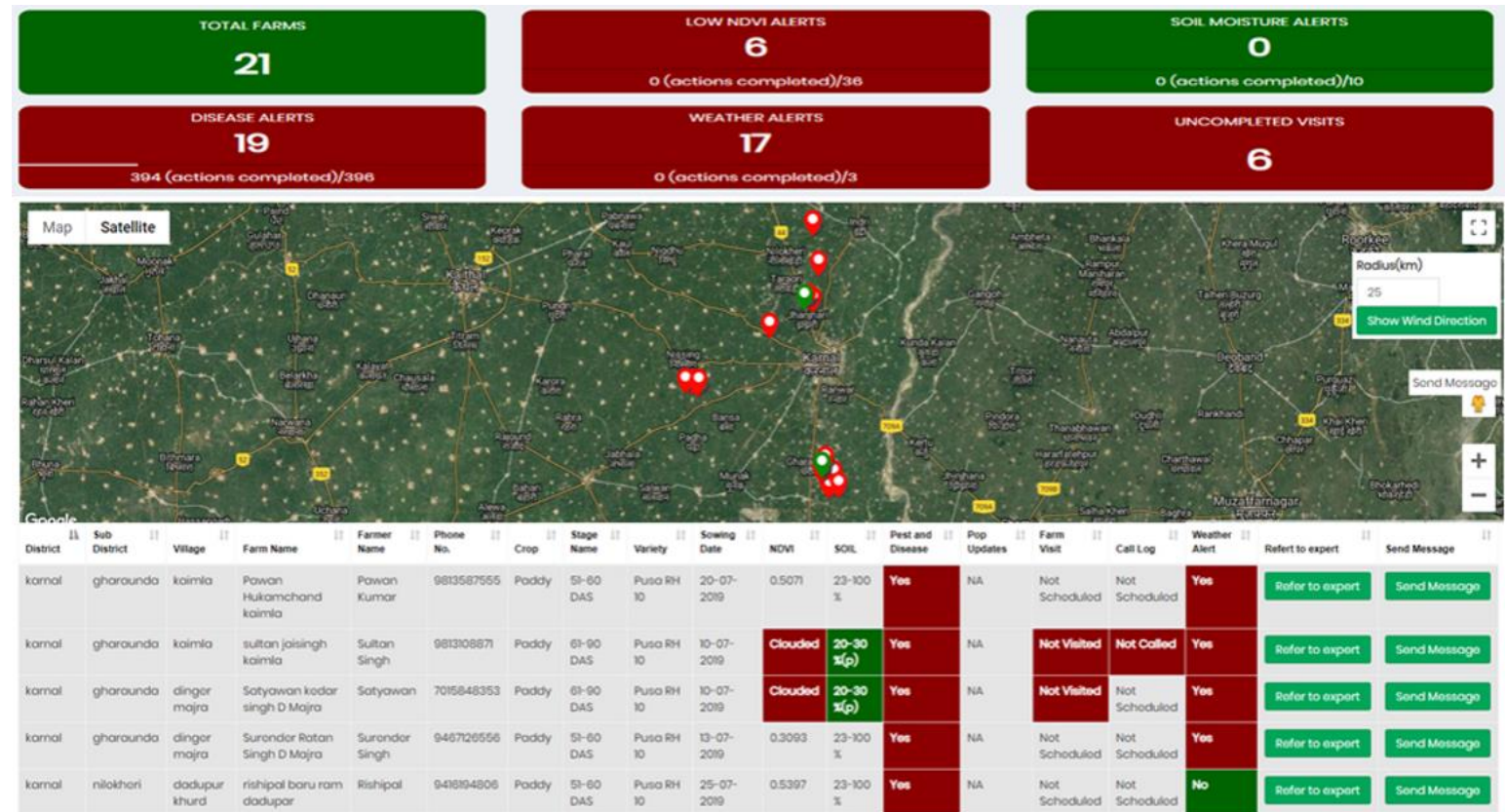
CROP PEST & DISEASE MANAGEMENT

- Pest and Disease forecasts based on wind movements, conducive weather conditions, plant vegetative growth and actual load based on pest sensor (monitored at a 10*10 sq km area), were provided to farmers along with advisories on preventive measures
- **Secufarm** provided the farmers a platform to send crop-related queries to our experts
 - Experts assisted by AI
- Access to mechanized sprayers are provided to efficiently spray chemicals in the Potato field; chemicals arranged if required



ONE-STOP PLATFORM FOR FARM MANAGEMENT

- Administrators had access to a dashboard to monitor all farms
- Dashboard showed total number of farms, along with the associated weather, disease, soil moisture, and crop health alerts
- Farmers who were not following POP were also listed



BACKGROUND

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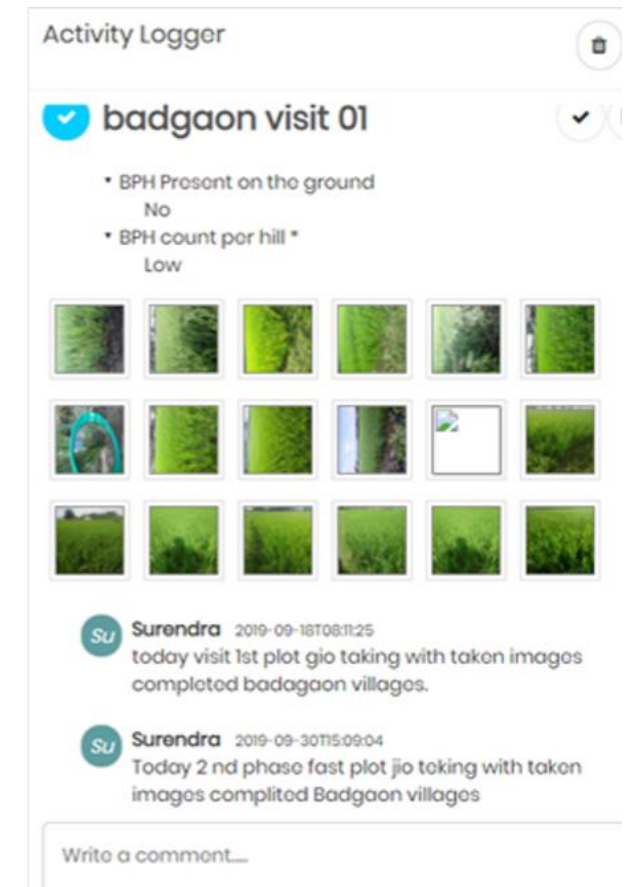
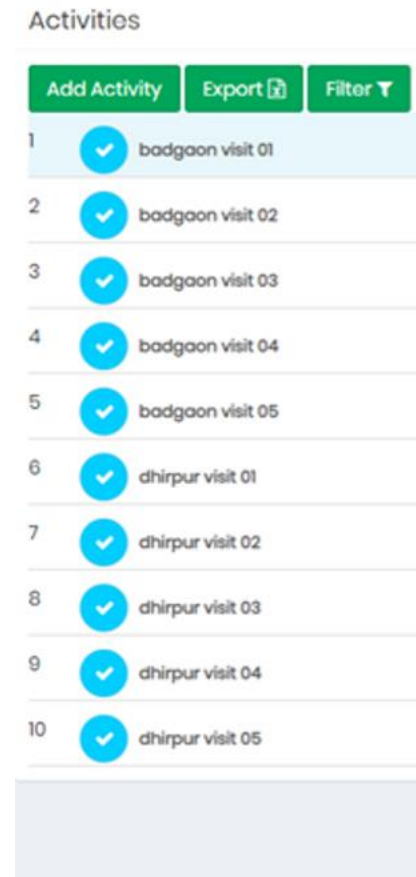
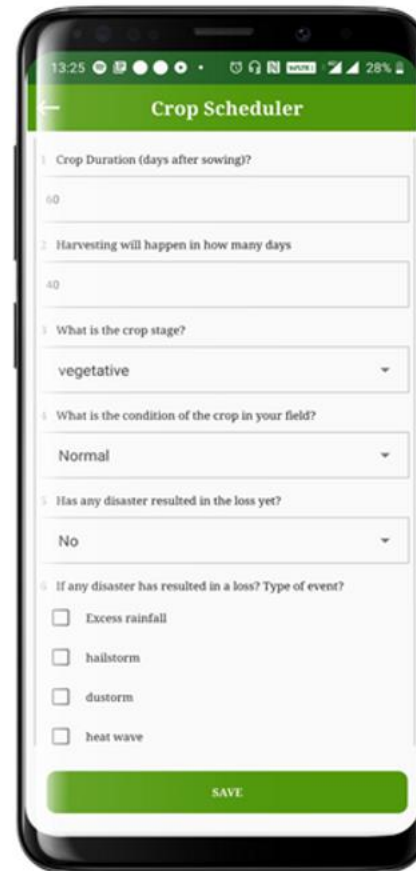
IMPACT



ABOUT US

IN CASE OF CROP STRESS, ADMIN ASSIGNED SURVEYS

- Assigned surveys showed up in the surveyors' mobile app
- Administrator could monitor the survey status and check the results & images through the website dashboard
- Stressed cases are referred to experts



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ABOUT US

HEDGING THE RISK

RISK HEDGING

Crop	Potato
Location	Bakura, Hugli, Burdhman (West Bengal)
Data Provider	INGEN Technologies P Ltd
Unseasonal Rainfall	
Date From	15-Dec 2016
Date to	10-Mar 2017
Index	Maximum of 3 consecutive day's cumulative rainfall above strike during the phase.
Strike_1 (mm)	20
Strike_2 (mm)	70
Exit(mm)	120
Notional (INR / mm)_1	27
Notional (INR / mm)_2	133
Total Maximum Payout (INR)	8000
Total Sum Insured (INR / Acre)	8000
Premium (INR / Acre)	550 (Excluding Service Tax)

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ABOUT US

FARMERS COULD ALSO FIND BEST PRICE FOR THEIR PRODUCE

The overall management procedure to ensure proper gradation, packaging and storage of produced crops led to better market price and lower rejections

- Through our pan-India network, farmers were also assured of better market price by establishing direct linkages between farmers and retailers



MECHANIZED PLANTING LED TO ~15% INCREMENT OF HIGH QUALITY PRODUCE

- ▶ Fertilizer usage optimized to remove fertilizers which were already in abundance e.g. phosphorous and addition of micronutrient like Zinc and boron that were deficient
- ▶ ~ 15% yield increment of high quality produce due to mechanised planting
- ▶ ~ 10% improvement in water use efficiency due to use of Irrigation Management System and timely rainfall forecast
- ▶ Loss Minimization due to timely weather and disease alerts
- ▶ Optimized use of Crop Protection Chemicals due to timely alerts and advisory; *Farmers were earlier using multiple chemicals for solving one pest/disease issue due to lack of knowledge*
- ▶ Yield guarantee resulted in payouts to farmers who suffered losses due to water logging on account of rainfall

WRMS

Water Resource Management Solutions



WRMS

HELPING FARMERS FACE THE MOST DAUNTING AGRARIAN CHALLENGES

India Headquarters

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