



Innovative Risk Mitigation Solutions for Cotton Industry



Nalin Rawal
Chief-Business Head

Skymet Weather Services Pvt. Ltd.

India's leading weather forecasting & Agriculture
Risk Solutions Company

RISK / CHALLENGES IN COTTON BUSINESS

Production Side

- ✓ **Weather Risk –Abiotic stress**
- ✓ **Biotic (Pest & Diseases) stress during crop cycle**
- ✓ **Real time weather based crop advisories**

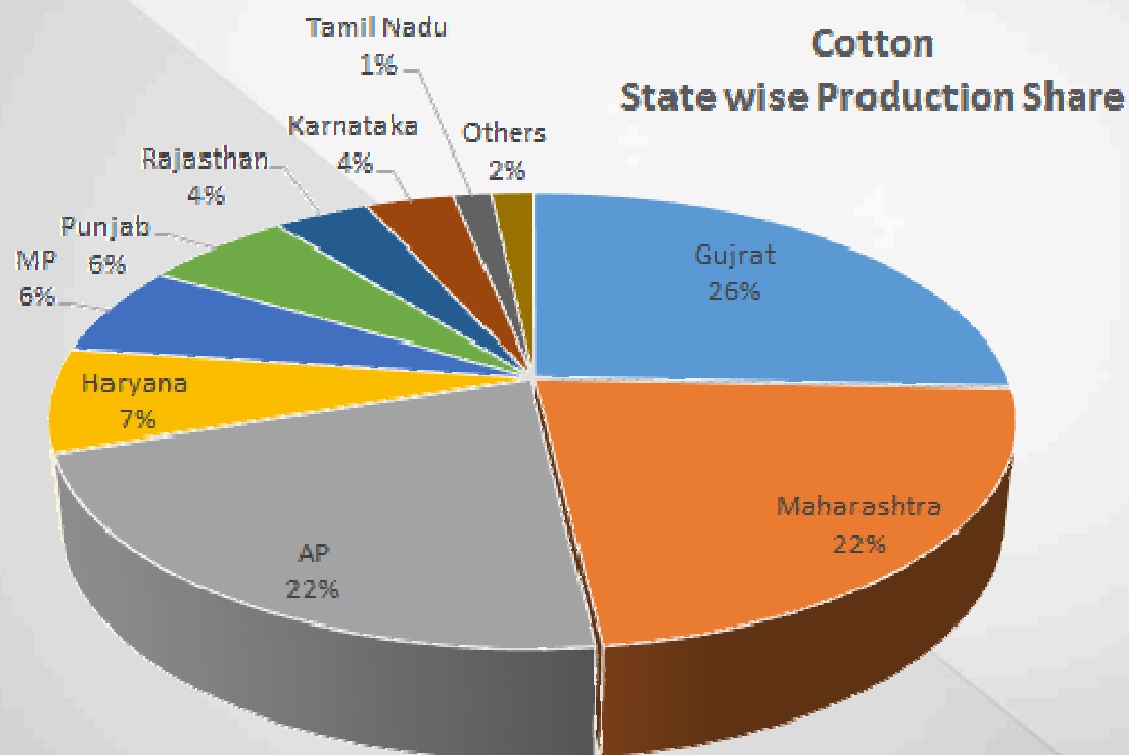
- ✓ **Crop failure risk in event of adverse weather**

- ✓ **Estimating cotton Acreage**
- ✓ **Real time crop monitoring and yield forecasting**
- ✓ **Estimating right yield / production**

Market Side

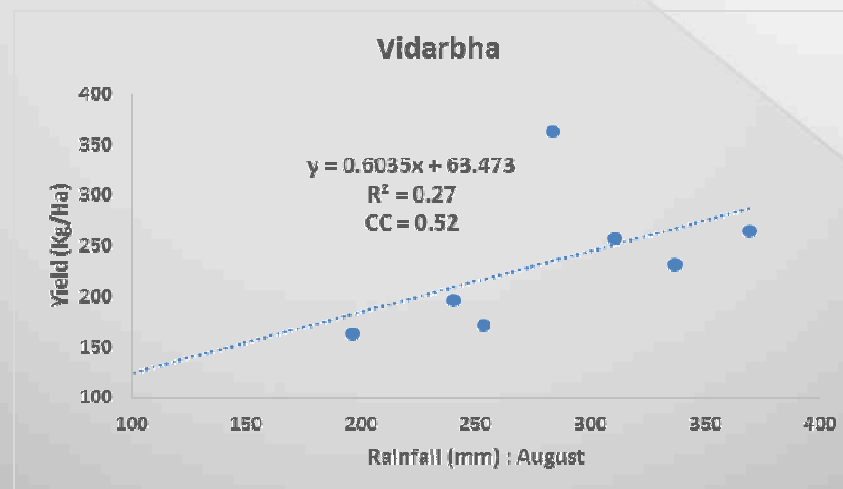
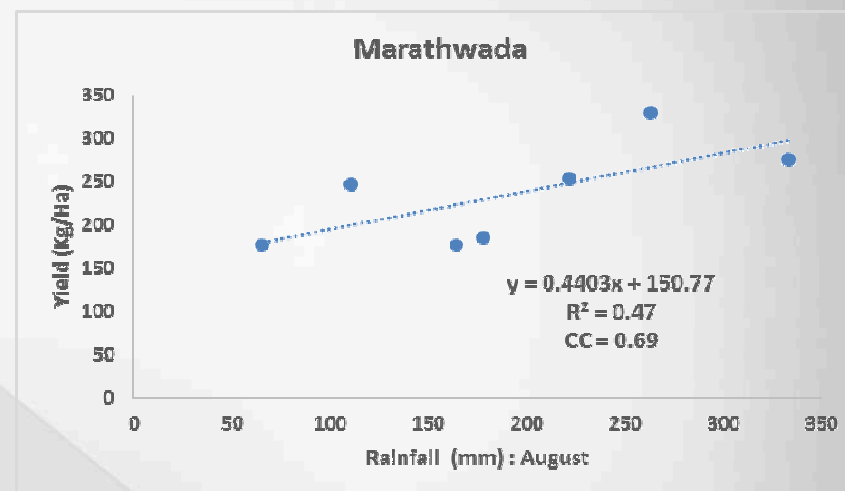
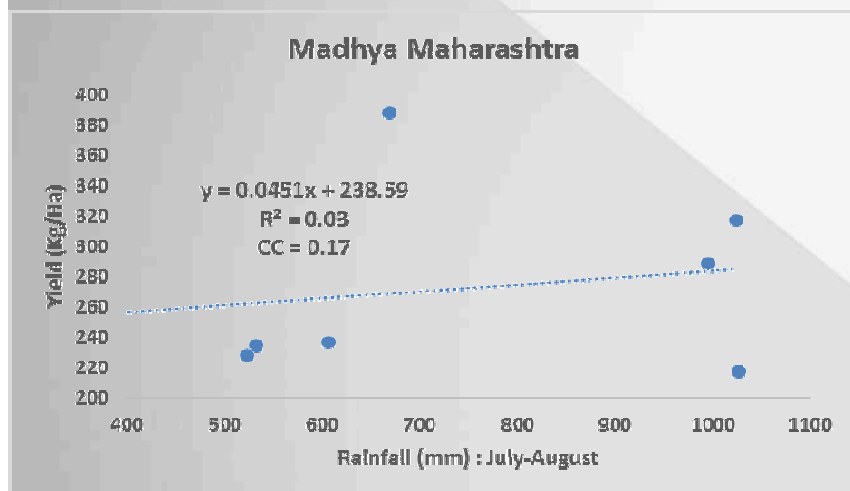
Weather & Cotton crop correlation

Total 9 states contribute 98 % + production of cotton



Rainfall and Yield Correlation

- ✓ Last 10 years yield and actual rainfall of 9 states categorized into 11 sub-divisions.
- ✓ All districts considered have cotton area greater than 70,000 Hectare.



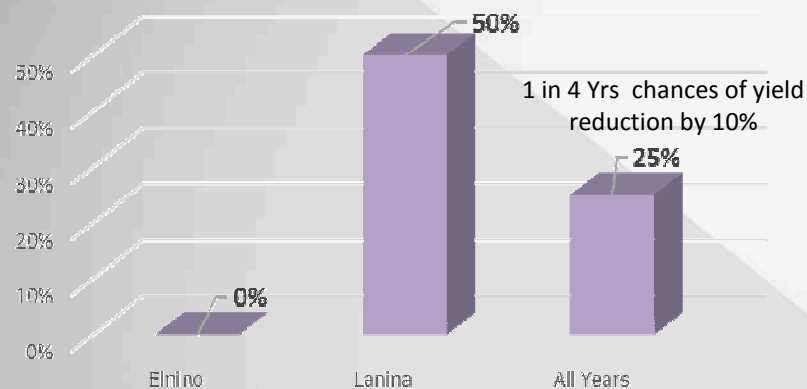
Rainfall & Productivity Correlations

Strong Correlation between Rainfall & Productivity in Areas with low irrigation percent

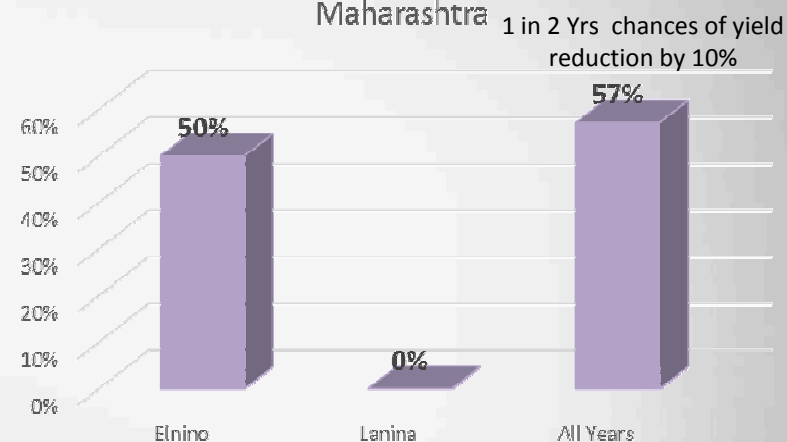
S.no	Zone	Correlations (Production & rainfall)	% Gross irrigated area
1	Coastal AP	0.6	50
2	Telengana	0.4	
3	NI Karnataka	0.9	66
4	West Rajasthan	0.2	64
5	Gujarat	0.3	38
6	Saurashtra & Kutch	0.8	
7	Haryana & Punjab	0.2	89 & 98
8	Marathwada	0.7	16
9	Vidharba	0.5	

Effect of El Nino & La Nina on Cotton Productivity

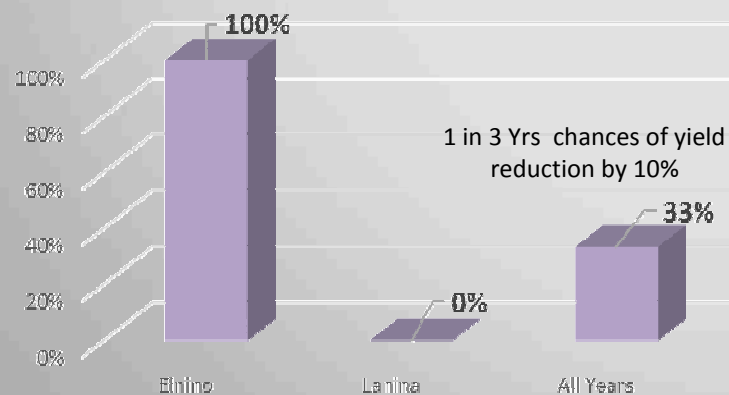
Chances of yield reduction by 10% in Coastal Andhra Pradesh



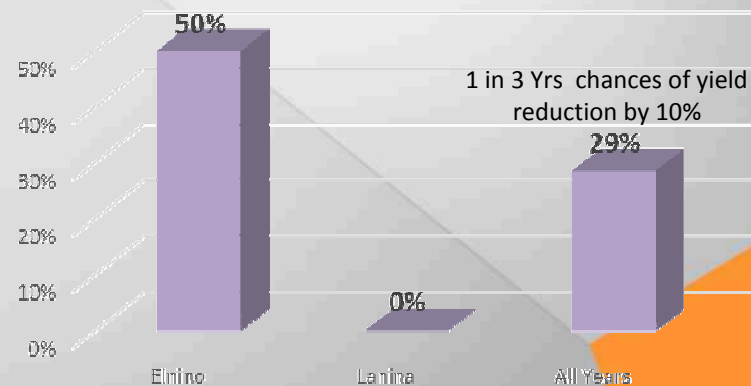
Chances of yield reduction by 10% in Madhya-Maharashtra



Chances of yield reduction by 10% in West Rajasthan



Chances of yield reduction by 10% in Gujarat Region





Mitigating Weather Risk

A blurry, low-angle shot of a road at night. The road surface is visible in the foreground, and the background shows dark, out-of-focus shapes that could be trees or buildings. A bright yellow rectangular box is centered horizontally across the middle of the image, containing the text "Weather Forecast" in black. In the top right corner, there is a faint, semi-transparent watermark that reads "WASIFIO.TUMBLR".

Weather Forecast

Weather forecast & Monitoring

- ❖ **Long Term Weather Forecast** – 3/4 months ahead
- ❖ **Medium Term Forecast** – 30 days ahead
- ❖ **Short Term Forecast** – 7 days ahead
- ❖ **Weather Alerts** – 24/72 Hrs ahead
- ❖ **Live Weather Data** – Hourly Live

SAMPLE SCREENSHOT



Welcome : Admin

Logout

Select State

Haryana
HimachalPradesh
JammuKashmir
Jharkhand
Karnataka
Kerala
MadhyaPradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Orissa
Punjab
Rajasthan
Sikkim

State: MadhyaPradesh

click for Weather Alerts ⁰

District	June		July		August		Forecast
	Normal	Forecast	Normal	Forecast	Normal	Forecast	
Alirajpur	100.8	Normal	295.4	Normal	287.9	Normal	177.8
Anuppur	198.2	Normal	383.4	Normal	394.2	Normal	228.4
Ashoknagar	85.8	Normal	290.2	Normal	311.7	Normal	152.9
Balaghat	196.0	Normal	468.4	Above Normal	442.7	Normal	214.0
Barwani	111.0	Normal	213.2	Normal	201.6	Normal	147.5
Betul	135.0	Normal	316.4	Normal	305.1	Normal	193.9
Bhind	52.7	Normal	227.1	Normal	255.7	Normal	145.5
Bhopal	115.6	Normal	356.0	Normal	341.3	Normal	198.2
Burhanpur	151.5	Normal	222.4	Above Normal	248.9	Normal	165.3
Chhatarpur	90.5	Normal	337.6	Normal	367.0	Normal	189.7
Chhindwara	171.5	Normal	352.8	Normal	340.5	Normal	202.7

Rainfall departure :

--All--
--All--
Flood
Above Normal
Normal
Below Normal
Drought

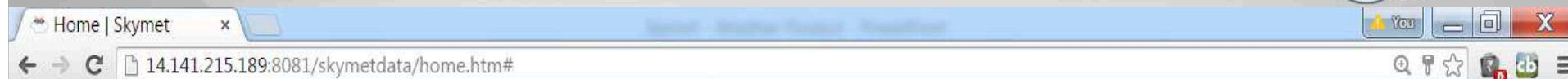
Download

Summary for Month JUNE

Total District(s)	50
Flood	0
Above Normal	0
Normal	50
Below Normal	0
Drought	0

Drought (< -60%)
Below Normal (-20% to -60%)
Normal (-20% to 20%)
Above normal (20% to 60%)
Flood (>60%)

SAMPLE SCREENSHOT



Welcome : Admin

Logout

Select State

Haryana
HimachalPradesh
JammuKashmir
Jharkhand
Karnataka
Kerala
MadhyaPradesh
Maharashtra
Manipur
Meghalaya
Mizoram
Nagaland
Orissa
Punjab
Rajasthan
Sikkim

State: MadhyaPradesh

click for Weather Alerts ⁰

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Rainfall departure :

- All--
- All--
- Flood
- Above Normal
- Normal
- Below Normal
- Drought

Download

Summary for Month JUNE

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Flood	0
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Below Normal	0
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- Drought (< -60%)
- Below Normal (-20% to -60%)
- Normal (-20% to 20%)
- Above normal (20% to 60%)
- Flood (>60%)

SAMPLE SCREENSHOT



Welcome : Admin

Logout

Select State

HimachalPradesh

JammuKashmir

Jharkhand

Karnataka

Kerala

MadhyaPradesh

Maharashtra

Manipur

Meghalaya

Mizoram

Nagaland

Orissa

Punjab

Rajasthan

Sikkim

Tamilnadu

State: Karnataka

click for Weather Alerts ⁰

Short Range

Extended

Seasonal

Accumulated Rainfall:

--ALL--
--ALL--
NR
LR to MR
HR

Download

District	Date Range (May-Jun)					
	16-20	21-25	26-30	31-04	10-14	
Bagalkot	LR to MR	HR	LR to MR	LR to MR	HR	LR to MR
Bangalore	HR	HR	HR	HR	HR	HR
Bangalore Rural	LR to MR	HR	HR	HR	HR	HR
Belgaum	LR to MR	HR	HR	LR to MR	HR	HR
Bellary	LR to MR	HR	LR to MR	LR to MR	HR	LR to MR
Bidar	LR to MR	LR to MR	LR to MR	LR to MR	LR to MR	LR to MR
Chamarajanagar	HR	HR	LR to MR	HR	LR to MR	LR to MR
Chikmagalur	LR to MR	HR	HR	HR	HR	HR
Chitradurga	LR to MR	HR	LR to MR	LR to MR	HR	LR to MR
Dakshina Kannada	HR	HR	HR	HR	HR	HR
Davanagere	LR to MR	HR	LR to MR	LR to MR	HR	LR to MR
Dharwad	LR to MR	HR	LR to MR	LR to MR	HR	HR

Details	Value
No rain (<1mm)	NR
Light to Moderate rain (1-20 mm)	LR to MR
Heavy Rain (>20 mm)	HR

SHORT RANGE FORECAST - SAMPLE SCREENSHOT

District Level-Temp, RH, Rainfall



Home | Skymet

skymetdata.skymetweather.com:8081/skymetdata/home.htm#

Welcome : Bayer
Logout

Select State

State: **AndhraPradesh**
Weather Alerts ³

Short Range(rain)
Short Range
Extended
Seasonal
Rain Probability : --All--
Download

District	Today 08-Jun-2015	Tuesday 09-Jun-2015	Wednesday 10-Jun-2015	Thursday 11-Jun-2015	Friday 12-Jun-2015	Saturday 13-Jun-2015
Ananthapur	Rain: 30%/1.0mm Temp: 35.0 /26.0°C RH: 83 /51% PARTLY CLOUDY	Rain: 60%/2.0mm Temp: 35.0 /27.0°C RH: 81 /52% PARTLY CLOUDY	Rain: 30%/1.0mm Temp: 35.0 /25.0°C RH: 73 /57% CLOUDY	Rain: 60%/7.0mm Temp: 32.0 /25.0°C RH: 87 /65% PARTLY CLOUDY	Rain: 30%/5.0mm Temp: 29.0 /24.0°C RH: 90 /80% CLOUDY	Rain: 30%/1.0mm Temp: 32.0 /25.0°C RH: 91 /69% PARTLY CLOUDY
Chittoor	Rain: 60%/3.0mm Temp: 38.0 /27.0°C RH: 74 /46% PARTLY CLOUDY	Rain: 30%/1.0mm Temp: 38.0 /27.0°C RH: 75 /45% CLOUDY	Rain: 60%/10.0mm Temp: 37.0 /26.0°C RH: 74 /43% CLOUDY	Rain: 85 %/61.0mm Temp: 36.0 /25.0°C RH: 95 /50% CLOUDY	Rain: 60%/12.0mm Temp: 34.0 /25.0°C RH: 91 /62% CLOUDY	Rain: 30%/7.0mm Temp: 35.0 /26.0°C RH: 86 /59% PARTLY CLOUDY
Eastgodavari	Rain: 30%/2.0mm Temp: 37.0 /27.0°C RH: 77 /42% PARTLY CLOUDY	Rain: 80 %/6.0mm Temp: 37.0 /26.0°C RH: 78 /41% PARTLY CLOUDY	Rain: 30%/1.0mm Temp: 36.0 /26.0°C RH: 76 /41% CLOUDY	Rain: 60%/4.0mm Temp: 34.0 /25.0°C RH: 92 /52% PARTLY CLOUDY	Rain: 30%/5.0mm Temp: 33.0 /24.0°C RH: 94 /59% CLOUDY	Rain: 60%/5.0mm Temp: 33.0 /25.0°C RH: 95 /57% PARTLY CLOUDY
Guntur	Rain: 30%/6.0mm Temp: 38.0 /27.0°C RH: 86 /50% PARTLY CLOUDY	Rain: 30%/3.0mm Temp: 38.0 /26.0°C RH: 87 /46% CLOUDY	Rain: 30%/2.0mm Temp: 39.0 /26.0°C RH: 82 /44% CLOUDY	Rain: 30%/3.0mm Temp: 37.0 /26.0°C RH: 88 /48% CLOUDY	Rain: 60%/8.0mm Temp: 36.0 /26.0°C RH: 88 /50% PARTLY CLOUDY	Rain: 60%/9.0mm Temp: 40.0 /27.0°C RH: 78 /40% CLOUDY
	Rain: 30%/5.0mm Temp: 37.0 /27.0°C RH: 86 /50% PARTLY CLOUDY	Rain: 80 %/6.0mm Temp: 37.0 /26.0°C RH: 87 /46% CLOUDY	Rain: 30%/1.0mm Temp: 36.0 /26.0°C RH: 82 /44% CLOUDY	Rain: 60%/4.0mm Temp: 34.0 /25.0°C RH: 88 /48% CLOUDY	Rain: 30%/5.0mm Temp: 33.0 /24.0°C RH: 94 /59% CLOUDY	Rain: 60%/5.0mm Temp: 33.0 /25.0°C RH: 95 /57% PARTLY CLOUDY

Descriptions
Rainfall Probability (%)
/ Rainfall (millimeter)

>=80%
60%
30%
0%

SHORT RANGE FORECAST - SAMPLE SCREENSHOT

Taluka Level-Temp, RH, Rainfall



Home | Skymet

skymetdata.skymetweather.com:8081/skymetdata/home.htm#

skymet weather wise

Welcome : Bayer Logout

Select State

State: AndhraPradesh, District: Ananthapur Weather Alerts ³

Short Range(rain) Short Range Extended Seasonal

Rain Probability: --All--

Download

Tehsils (Ananthapur)	Today 08-Jun-2015	Tuesday 09-Jun-2015	Wednesday 10-Jun-2015	Thursday 11-Jun-2015	Friday 12-Jun-2015	Saturday 13-Jun-2015
Agali	Rain: 30% 3.0mm Temp: 36.0/26.0°C RH: 90/45% PARTLY CLOUDY	Rain: 30% 4.0mm Temp: 36.0/26.0°C RH: 89/44% CLOUDY	Rain: 30% 3.0mm Temp: 37.0/25.0°C RH: 83/42% CLOUDY	Rain: 60% 6.0mm Temp: 34.0/25.0°C RH: 89/53% PARTLY CLOUDY	Rain: 80% 12.0mm Temp: 31.0/25.0°C RH: 90/70% CLOUDY	Rain: 60% 5.0mm Temp: 33.0/26.0°C RH: 90/59% PARTLY CLOUDY
Amadagur	Rain: 30% 1.0mm Temp: 39.0/28.0°C RH: 70/43% PARTLY CLOUDY	Rain: 30% 1.0mm Temp: 38.0/28.0°C RH: 69/43% CLOUDY	Rain: 60% 14.0mm Temp: 37.0/26.0°C RH: 71/41% CLOUDY	Rain: 80% 33.0mm Temp: 37.0/26.0°C RH: 93/48% CLOUDY	Rain: 60% 14.0mm Temp: 35.0/26.0°C RH: 89/60% CLOUDY	Rain: 30% 7.0mm Temp: 35.0/26.0°C RH: 85/58% PARTLY CLOUDY
Amarapuram	Rain: 30% 2.0mm Temp: 37.0/27.0°C RH: 86/41% PARTLY CLOUDY	Rain: 30% 2.0mm Temp: 37.0/27.0°C RH: 86/39% PARTLY CLOUDY	Rain: 0% 0.0mm Temp: 38.0/26.0°C RH: 80/40% PARTLY CLOUDY	Rain: 60% 10.0mm Temp: 35.0/26.0°C RH: 86/54% PARTLY CLOUDY	Rain: 60% 12.0mm Temp: 32.0/26.0°C RH: 88/68% CLOUDY	Rain: 60% 3.0mm Temp: 33.0/26.0°C RH: 89/61% PARTLY CLOUDY
Ammalladinne	Rain: 30% 2.0mm Temp: 37.0/27.0°C RH: 86/41% PARTLY CLOUDY	Rain: 30% 2.0mm Temp: 37.0/27.0°C RH: 86/39% PARTLY CLOUDY	Rain: 0% 0.0mm Temp: 38.0/26.0°C RH: 80/40% PARTLY CLOUDY	Rain: 60% 10.0mm Temp: 35.0/26.0°C RH: 86/54% PARTLY CLOUDY	Rain: 60% 12.0mm Temp: 32.0/26.0°C RH: 88/68% CLOUDY	Rain: 60% 3.0mm Temp: 33.0/26.0°C RH: 89/61% PARTLY CLOUDY
	Rain: 30% 1.0mm Temp: 35.0/26.0°C	Rain: 60% 2.0mm Temp: 35.0/27.0°C	Rain: 30% 1.0mm Temp: 35.0/25.0°C	Rain: 60% 7.0mm Temp: 32.0/25.0°C	Rain: 30% 5.0mm Temp: 29.0/24.0°C	Rain: 30% 1.0mm Temp: 32.0/25.0°C

Descriptions

Rainfall Probability (%)
/ Rainfall (millimeter)

>=80%

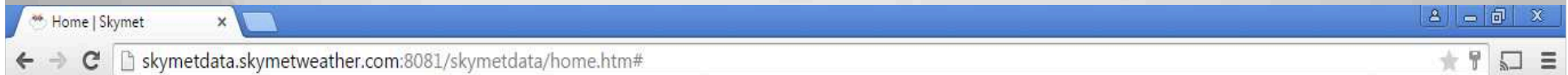
60%

30%

0%

skymetdata.skymetweather.com:8081/skymetdata/home.htm#

Sample Report (Weather Alert)

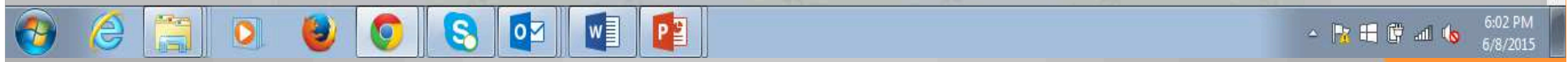


State	Alert
ANDHRAPRADESH	ANDHRA PRADESH Light to moderate rain and thundershowers at some places are likely over Anantapur, Chittoor, East Godavari, Guntur, Krishna, Machilipatnam, Nellore, Prakasam, Srikakulam, Vishakhapatnam, Vizianagaram and West Godavari districts of Andhra Pradesh during the next 5 hours. Date/Time : 2015-06-08 10:26:37.0,2015-06-08 23:59:59.0
GUJARAT	GUJARAT rain and thundershowers at some places are likely over Banaskantha, Deesa, Jamnagar, Junagadh, Kutch, Patan, Porbandar, Rajkot and Surendranagar districts of Gujarat with strong average winds of 40 kmph gusting at 70 kmph during the next 6 to 12 hours.

WEATHER ALERT FOR RAJASTHAN

Light to moderate rain and thundershowers at a few places are likely over Dausa, Jaipur, Sawai Madhopur and Tonk districts of Rajasthan during the next 4 hours.

Date/ Time: 25 October, 2014/ 14:57 Hrs.





3000+ AWS Locations

15 States

Head Office: Noida

Regional Office(S) : 4
(Patna, Jaipur, Mumbai & Hyderabad)



India
maize
summit'15

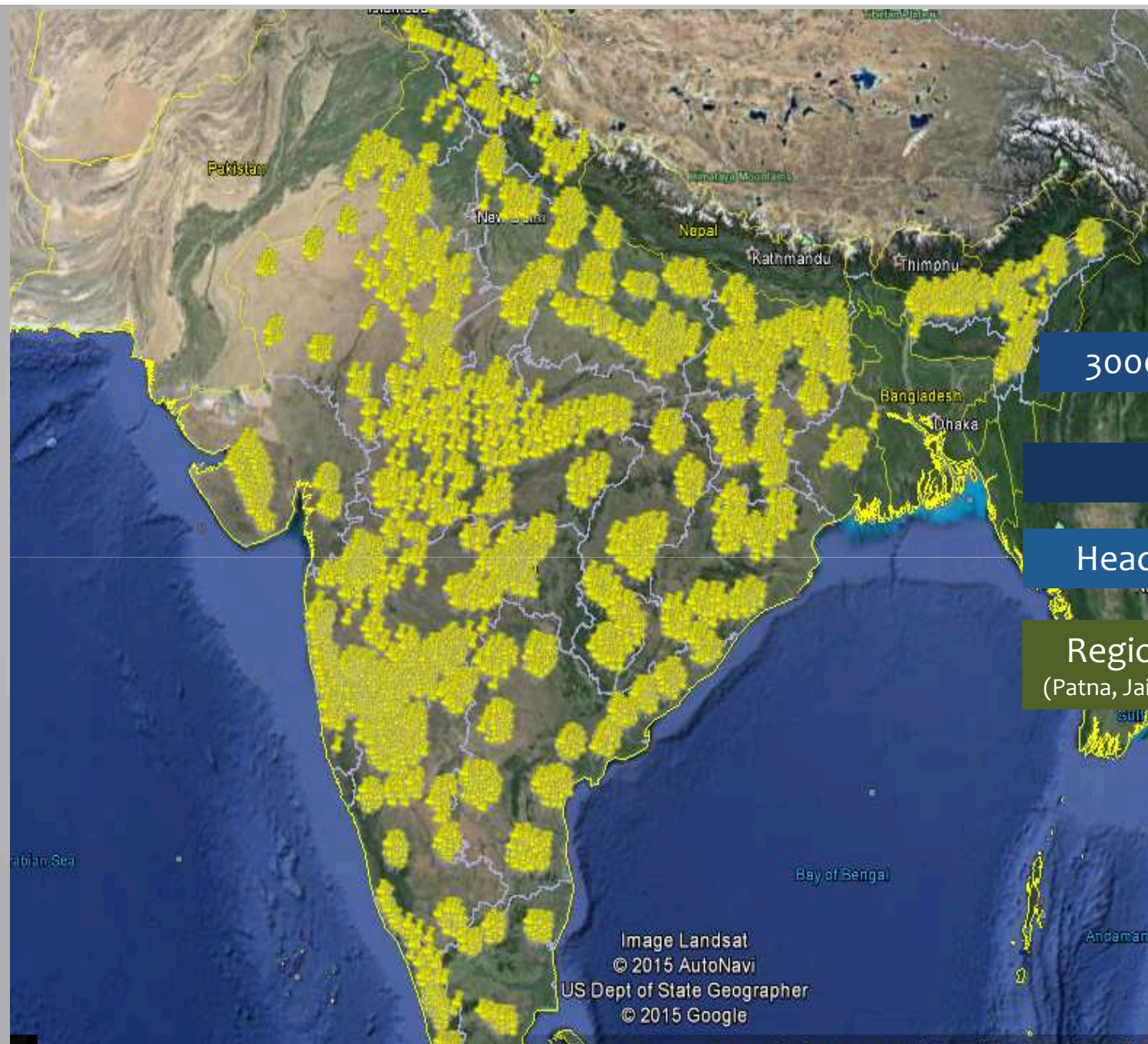


Image Landsat
© 2015 AutoNavi
US Dept of State Geographer
© 2015 Google

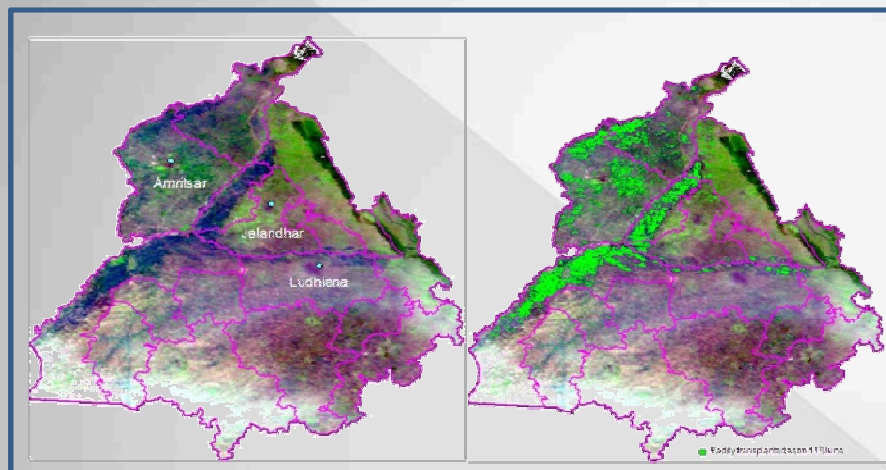
GIS & UAV (Drones) Based

Crop - Acreage / Health Monitoring

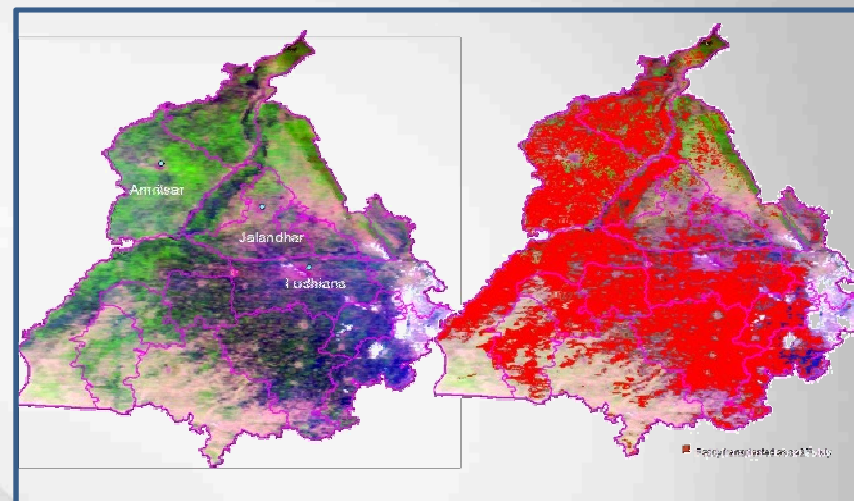
CROP ACREAGE STATUS – PUNJAB PADDY (Kharif'2013)



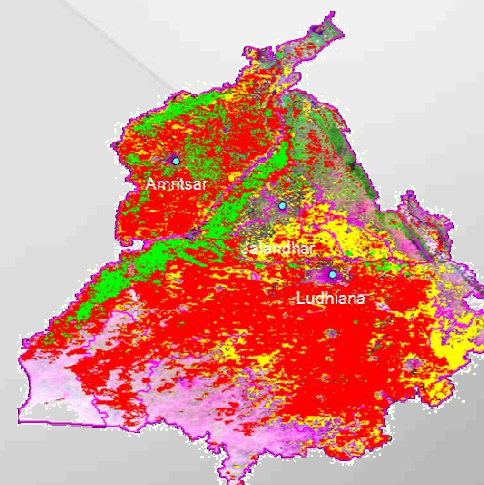
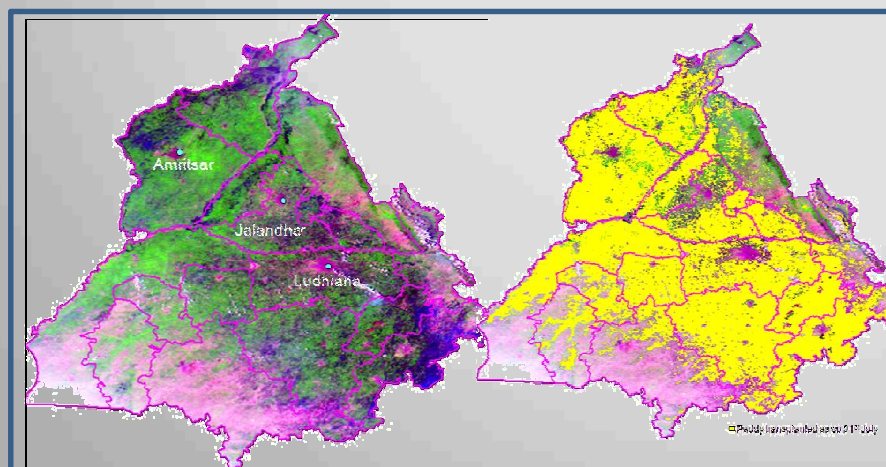
Paddy Crop Sowing Status till mid June



Paddy Crop Sowing Status till 1st week of July



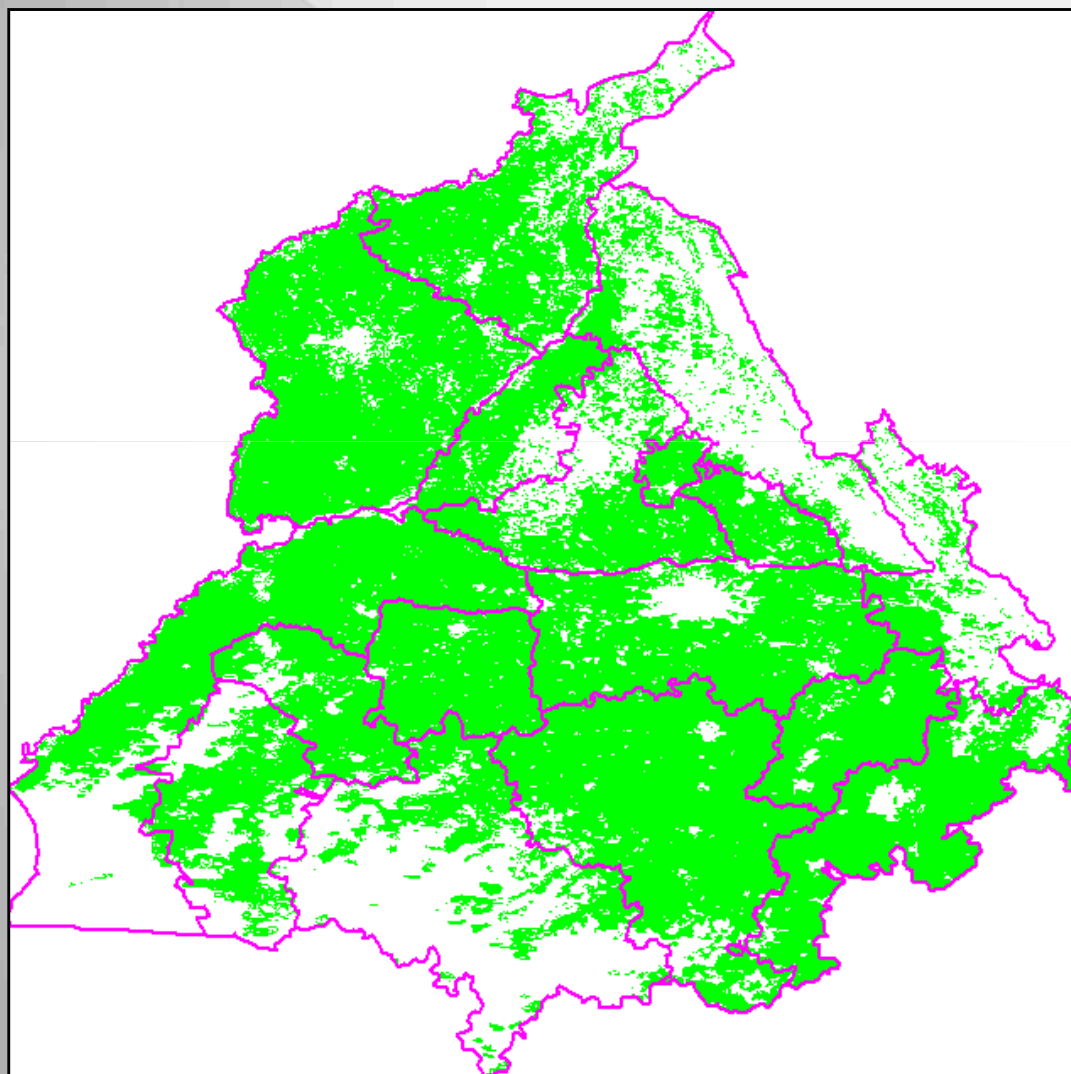
Paddy Crop Sowing Status till End of July



Crop
Sowing
Status end
of Season

- Paddy transplanted as on 1st July
- Paddy transplanted as on 2nd July
- Paddy transplanted as on 31st July

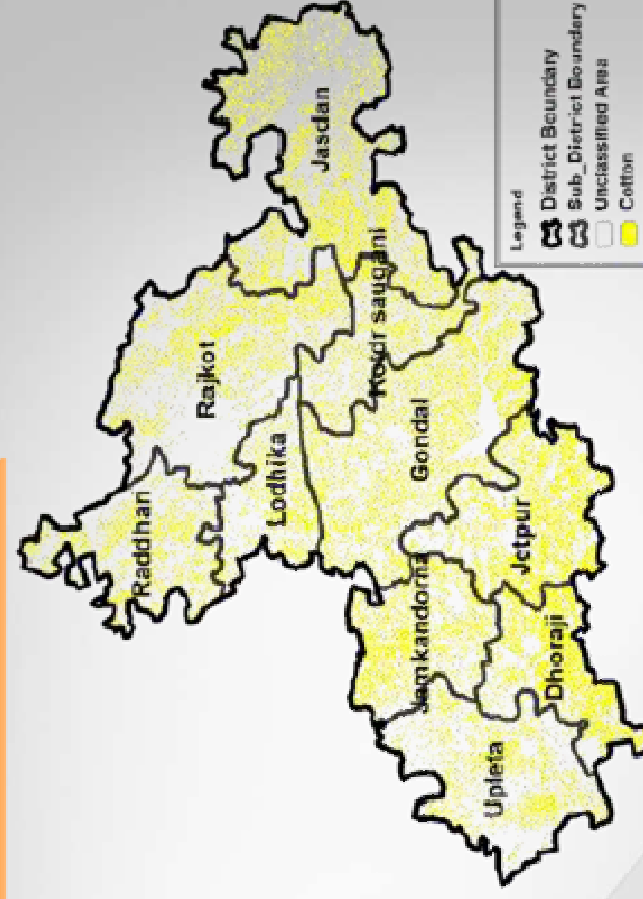
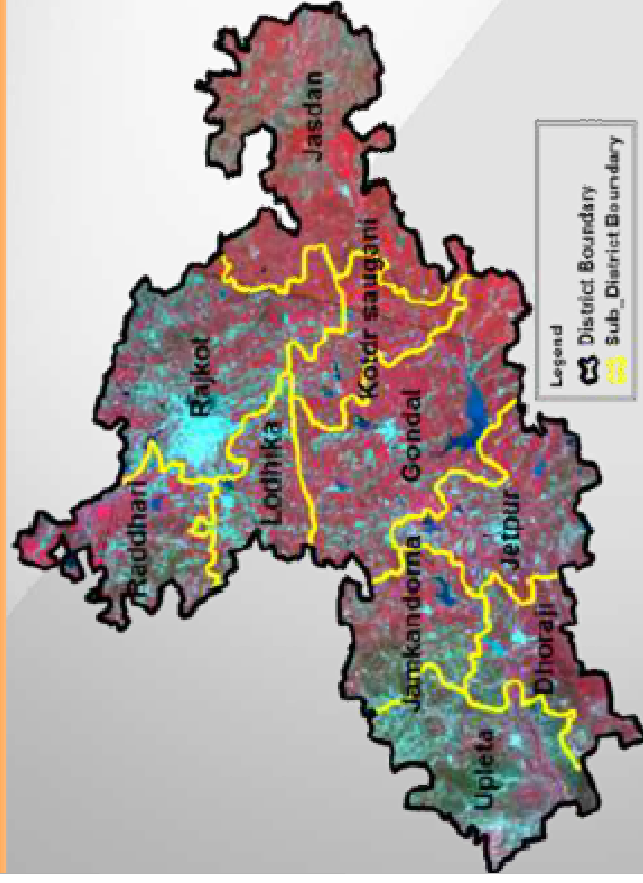
ACERAGE – PUNJAB DISTRICT WISE PADDY



District wise Paddy acreage

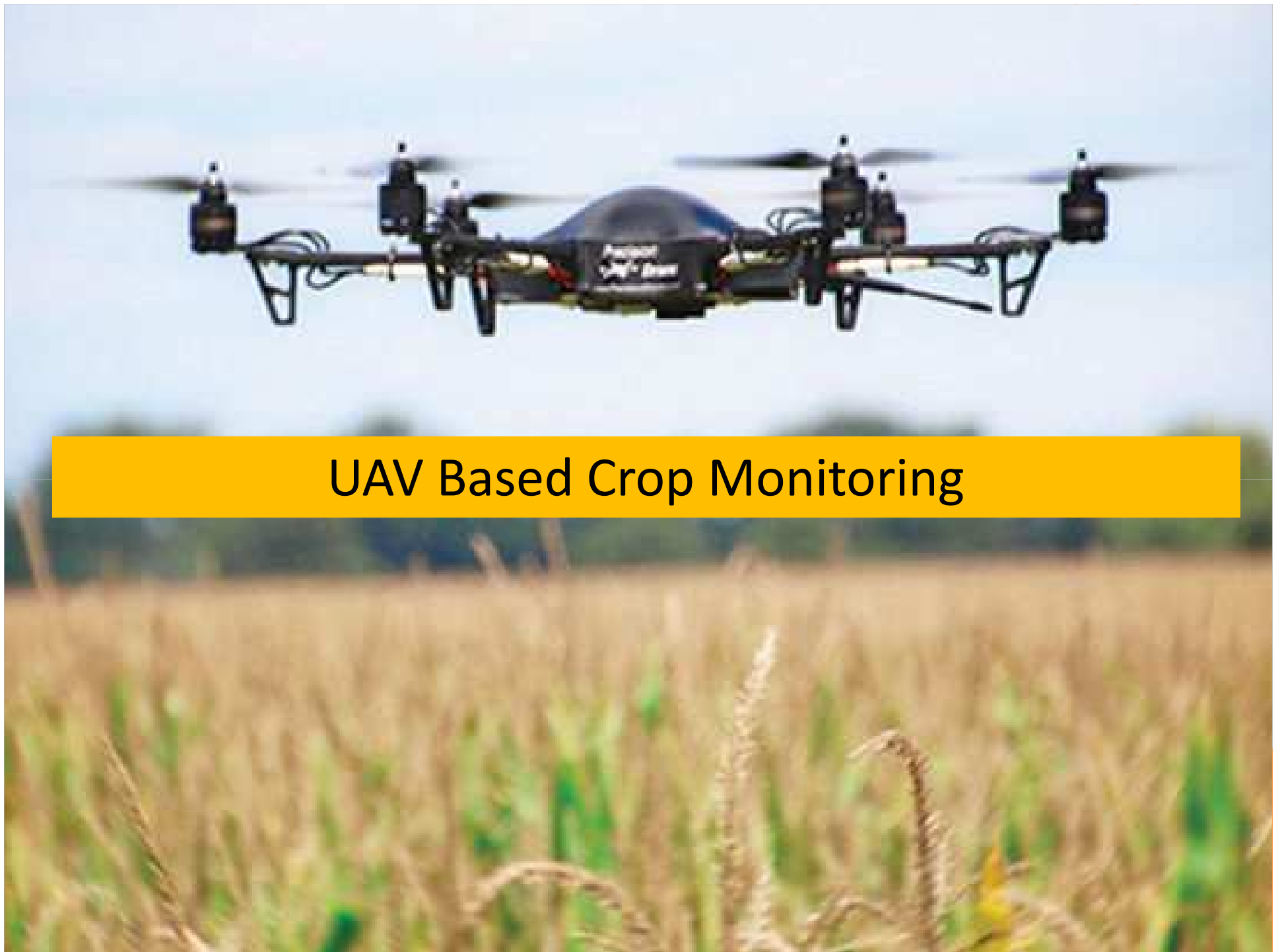
S.No.	District	Acreage (Ha.)
1	Amritsar	323,163
2	Bhatinda	124,256
3	Faridkot	118,369
4	Fatehgarh Sahib	125,244
5	Firozpur	371,069
6	Gurdaspur	213,150
7	Hoshiarpur	78,019
8	Jalandhar	90,194
9	Kapurthala	99,725
10	Ludhiana	299,006
11	Moga	163,031
12	Muktheswar	73,688
13	Nawanshahr	11,069
14	Patiala	228,420
15	Ropar	52,641
16	Sangrur	425,206
Total		27,96,248

STUDY AREA, RAJKOT, GUJARAT



Sub District	Cotton
Jetpur	28,926
Raddhari	15,973
Lodhika	10,165
Rajkot	26,329
Jasdan	37,907
Kotdrsaugani	13,892
Gondal	39,047
Upleta	17,489
Dhoraji	21,956
Jamkandorna	19,060
Total of All Sub Districts (Ha)	230,743

Satellite Image –LANDSAT
 Acquisition Date – 29th Sep, 6th Oct 2015
 District – Rajkot
 Resolution – 30M
 Acreage – Cotton – Ha 230,743



UAV Based Crop Monitoring

UNMANNED AERIAL VEHICLE (UAV)

- ❖ Completely automatic & remote controlled
- ❖ Ability to reach maximum of 400m from ground
- ❖ Area captured in one flight - 4 sq Km
- ❖ Ability to fly continuously for 1.5 Hrs
- ❖ Images captured in Visible region & IR (Infra Red) spectrum
- ❖ Provides Geo referenced images



UAV IMAGES – 150M



UAV IMAGES – 100M



UAV IMAGES – 75M



UAV IMAGES – 50M

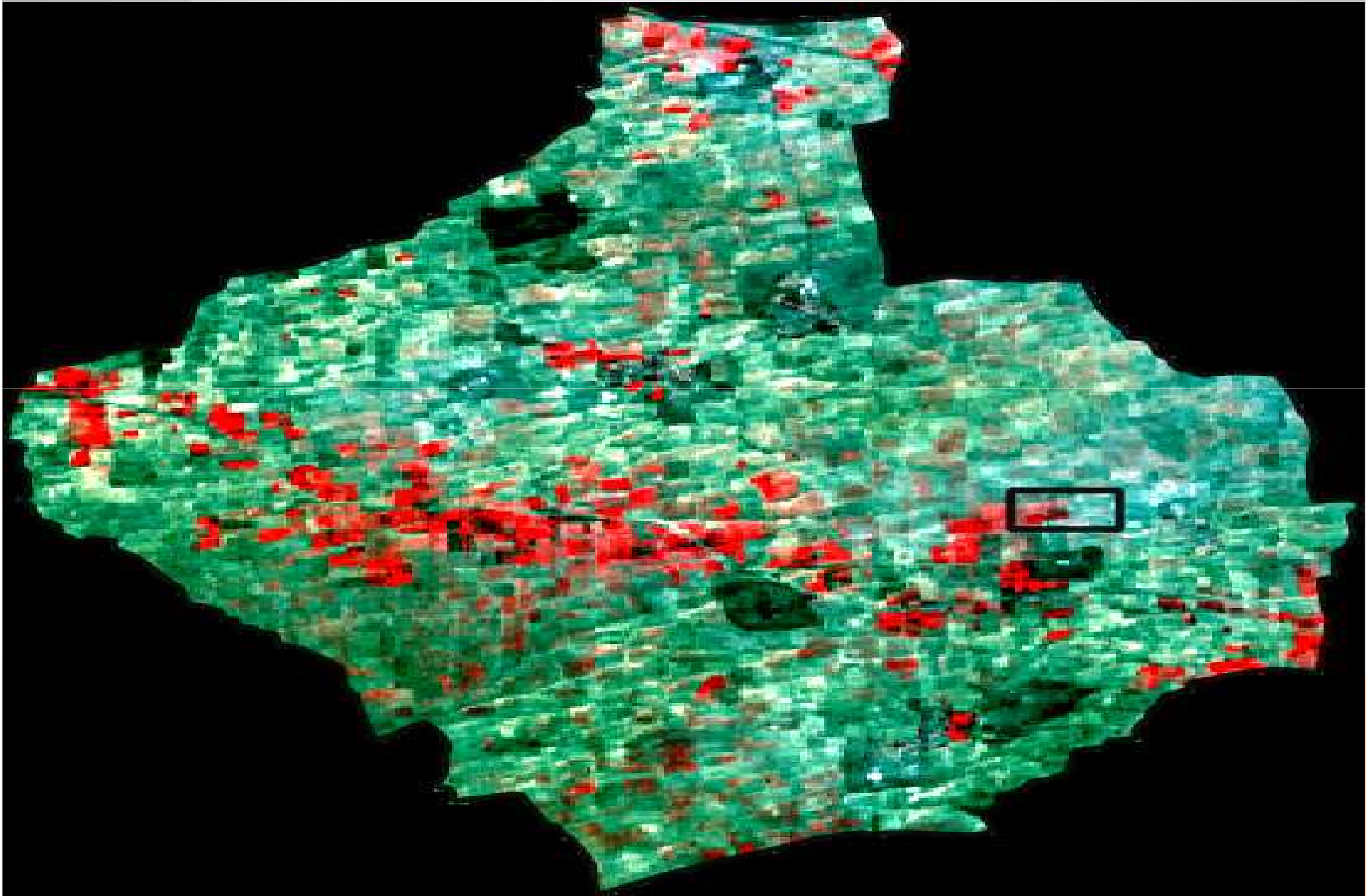
Groundnut

Cotton



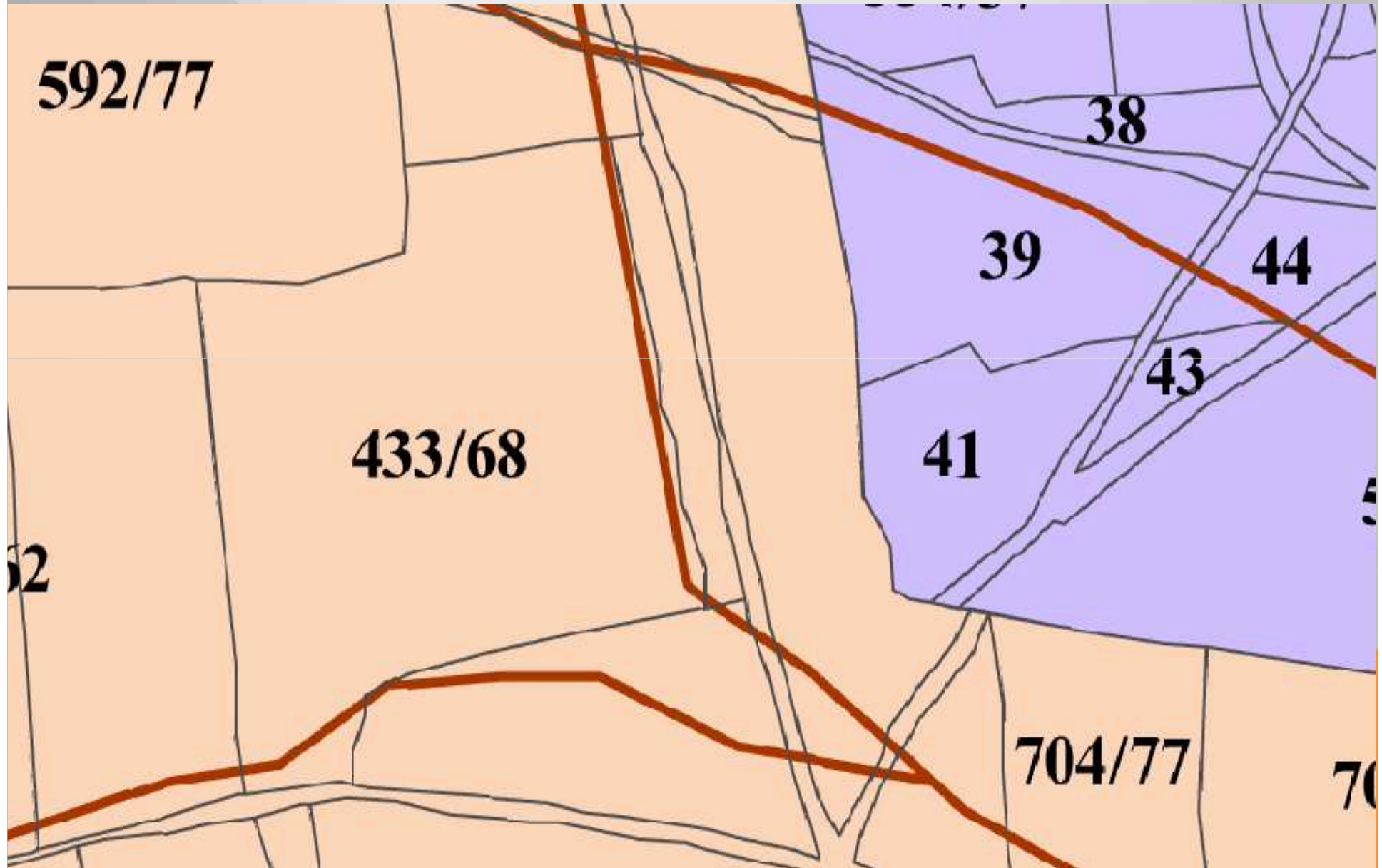
Monitoring Gram

Churu – Rajasthan (Rabi 2014-15)



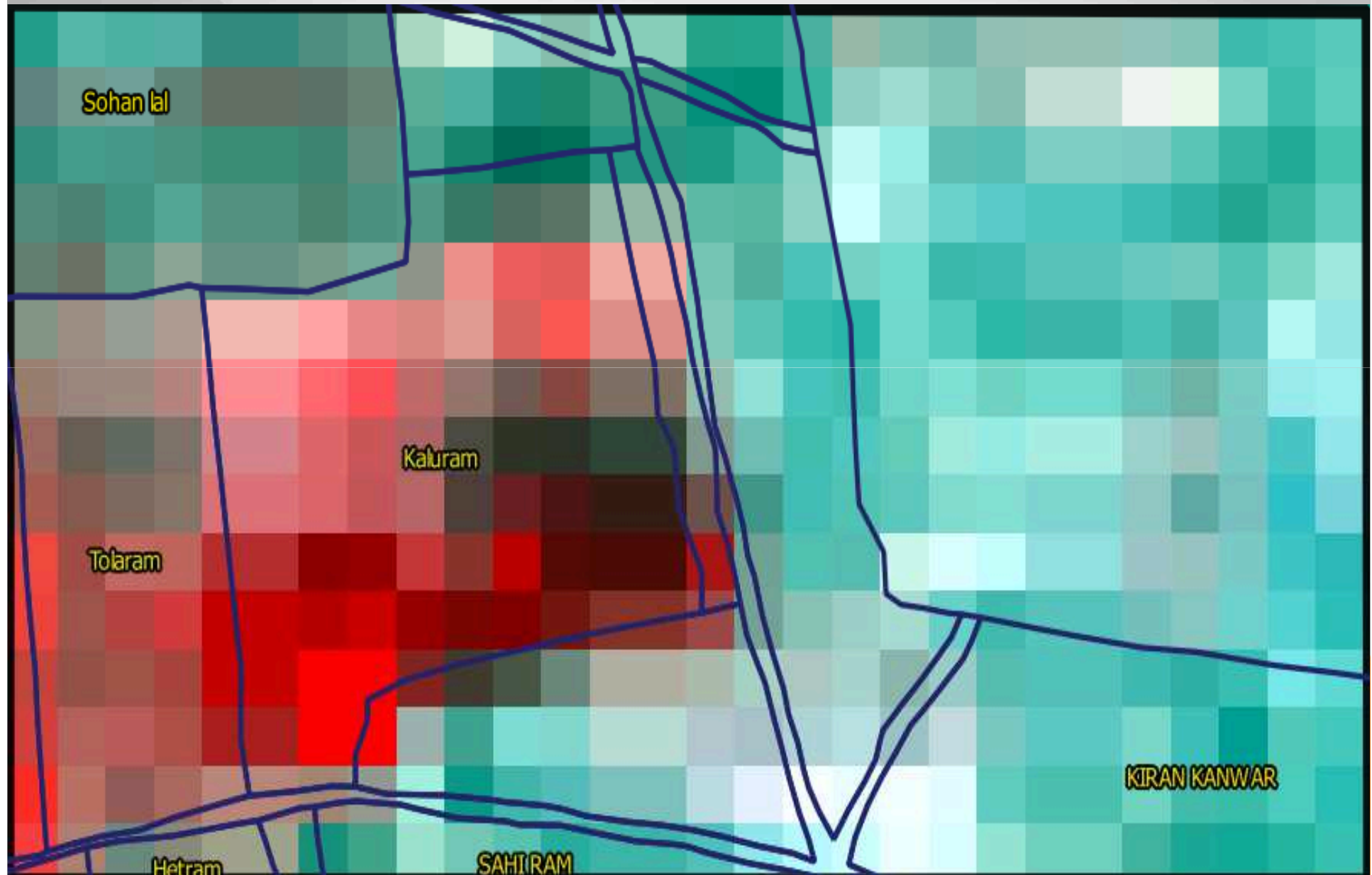
Cadstral Map

Churu – Rajasthan



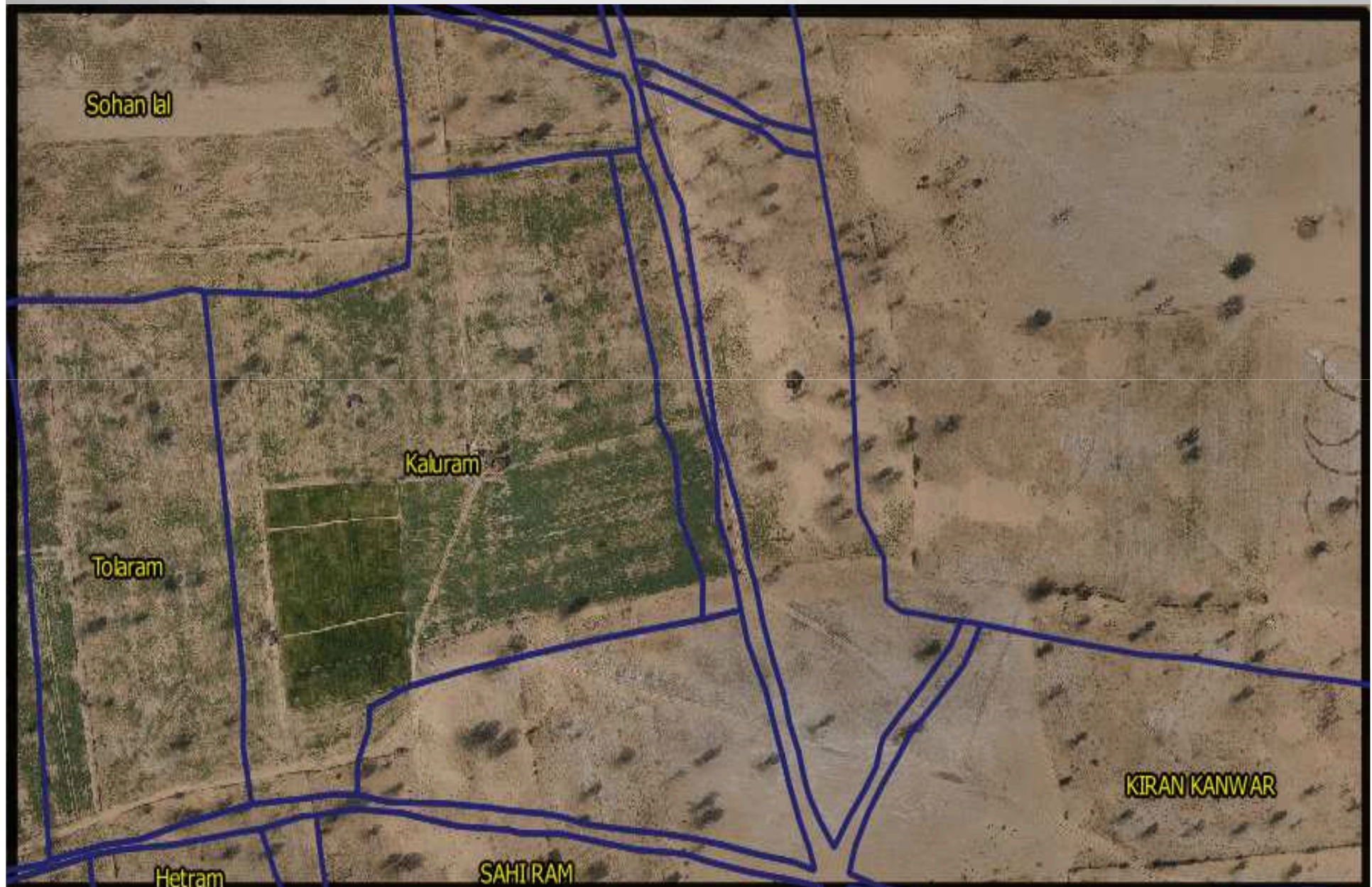
Monitoring Gram – Remote Sensing

Churu – Rajasthan (Rabi 2014-15)



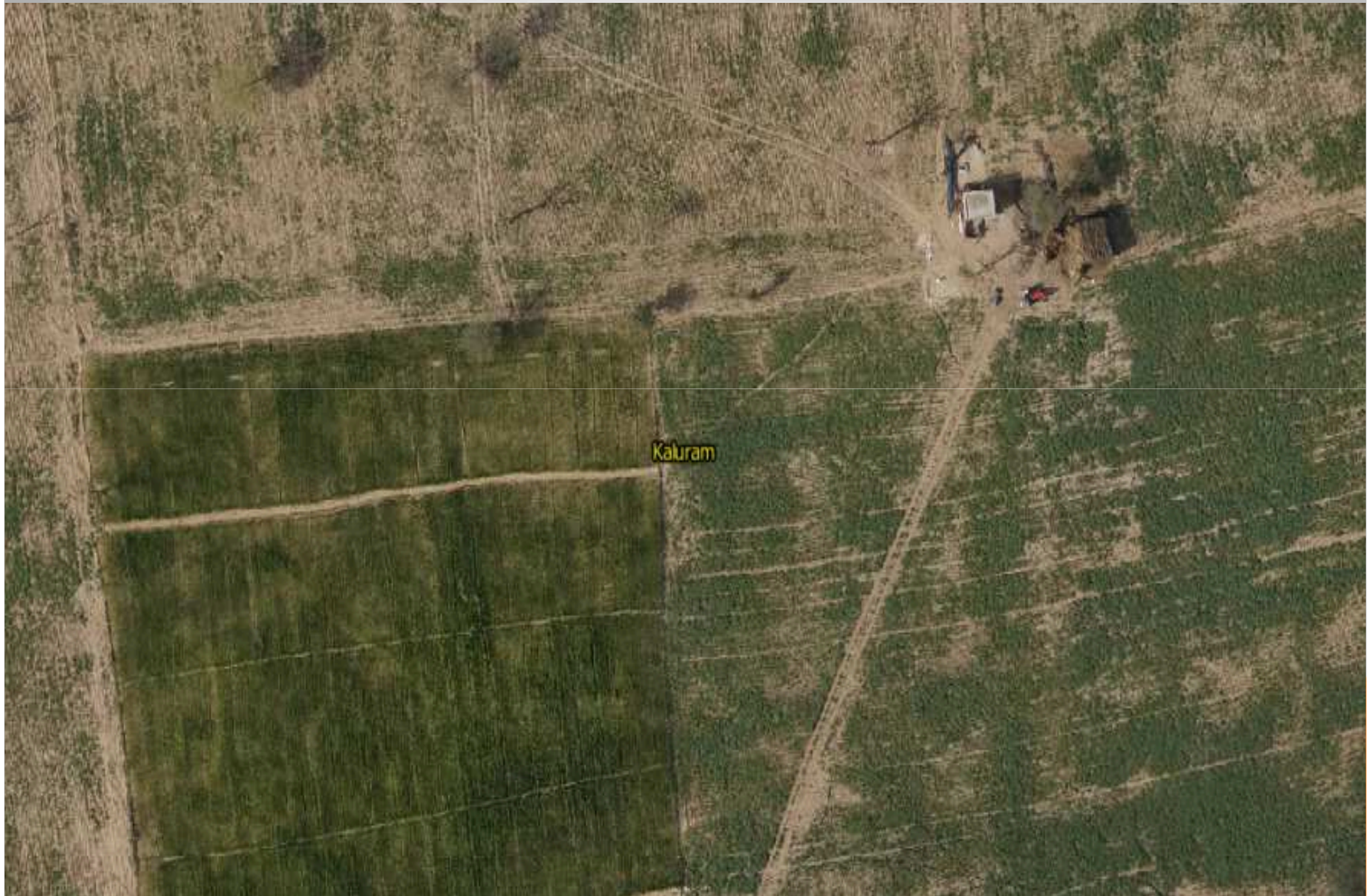
Monitoring Gram - UAV

Churu – Rajasthan (Rabi 2014-15)



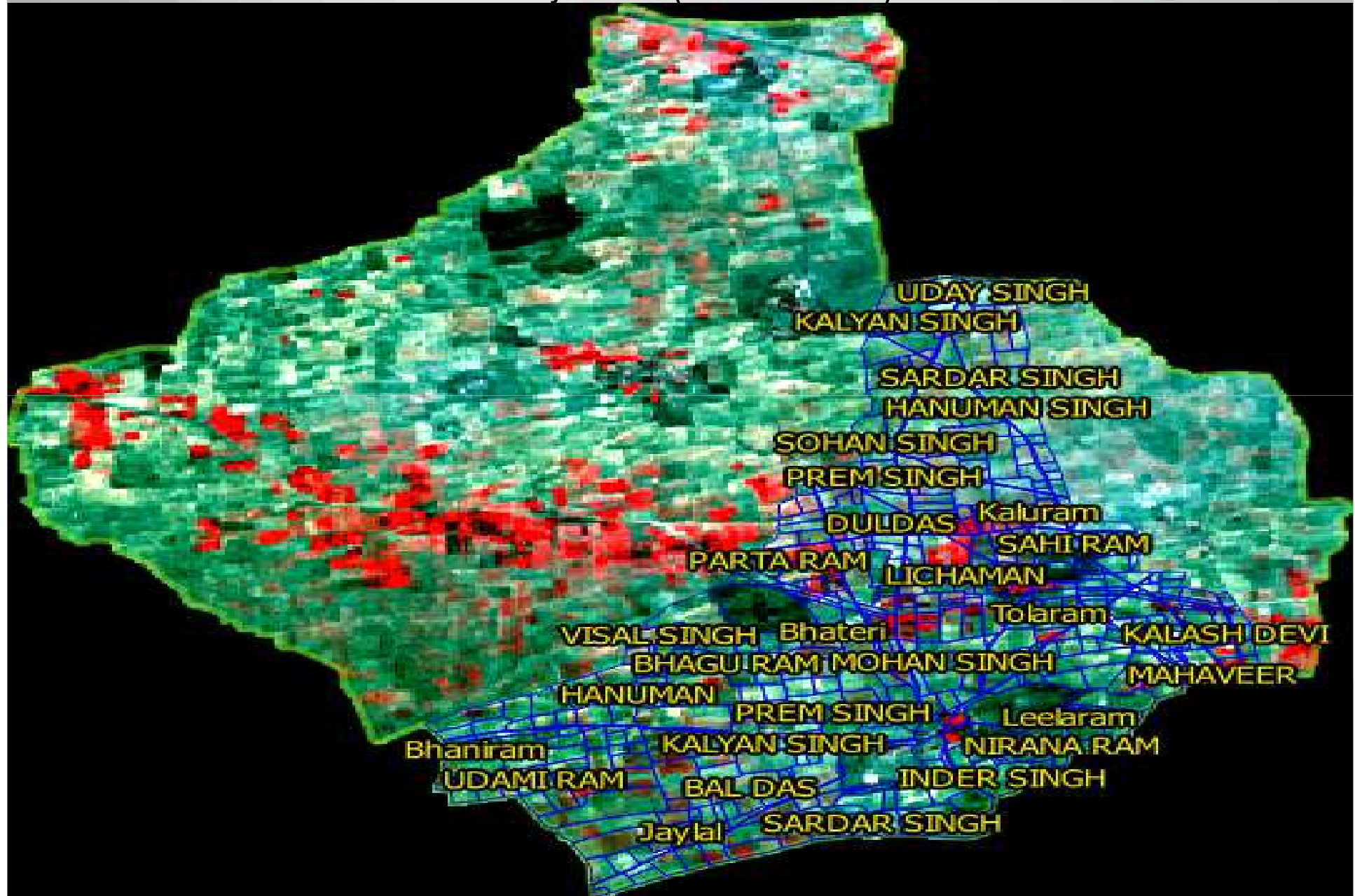
Monitoring Gram - UAV

Churu – Rajasthan (Rabi 2014-15)



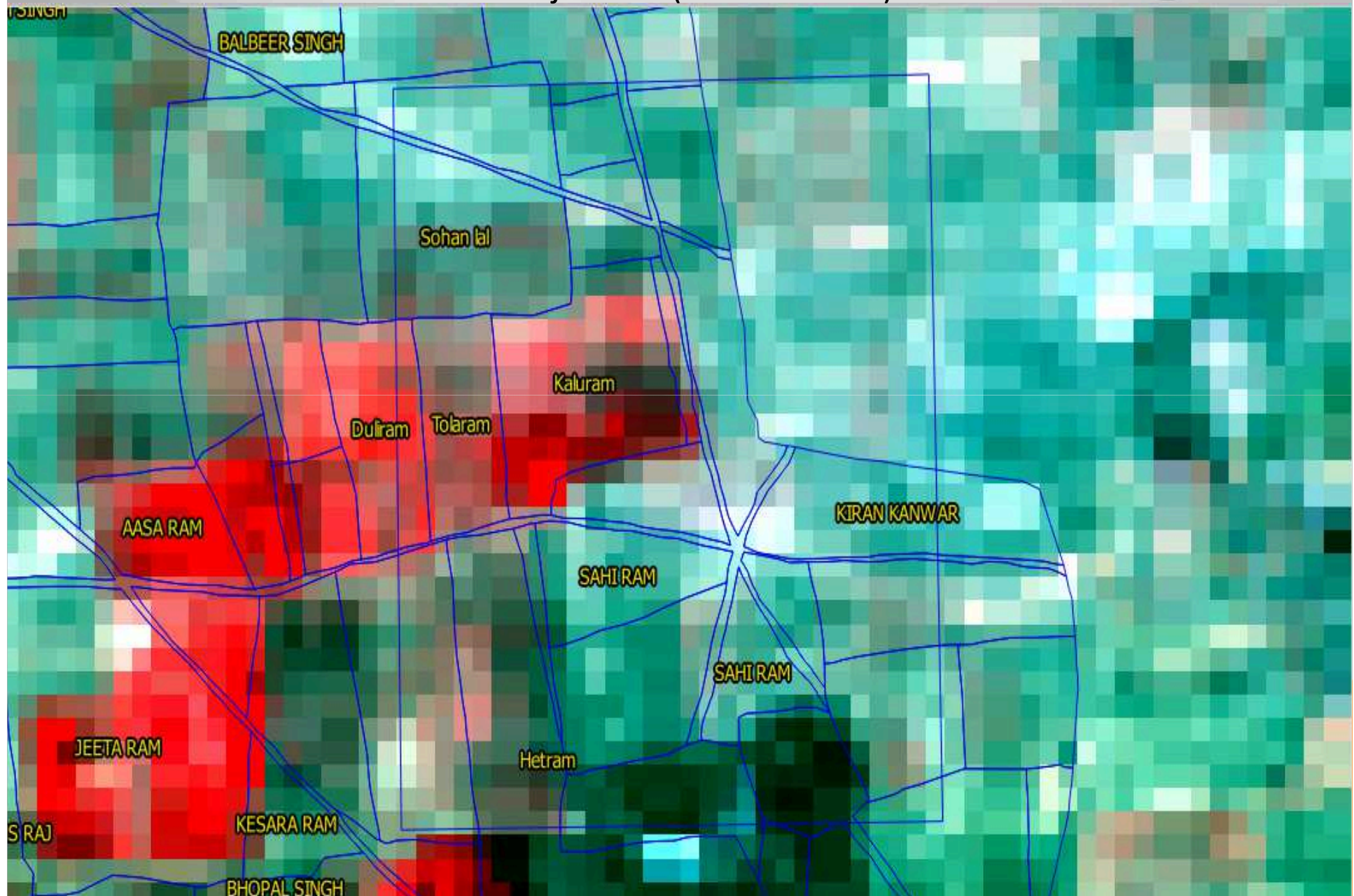
Monitoring Gram

Churu – Rajasthan (Rabi 2014-15)



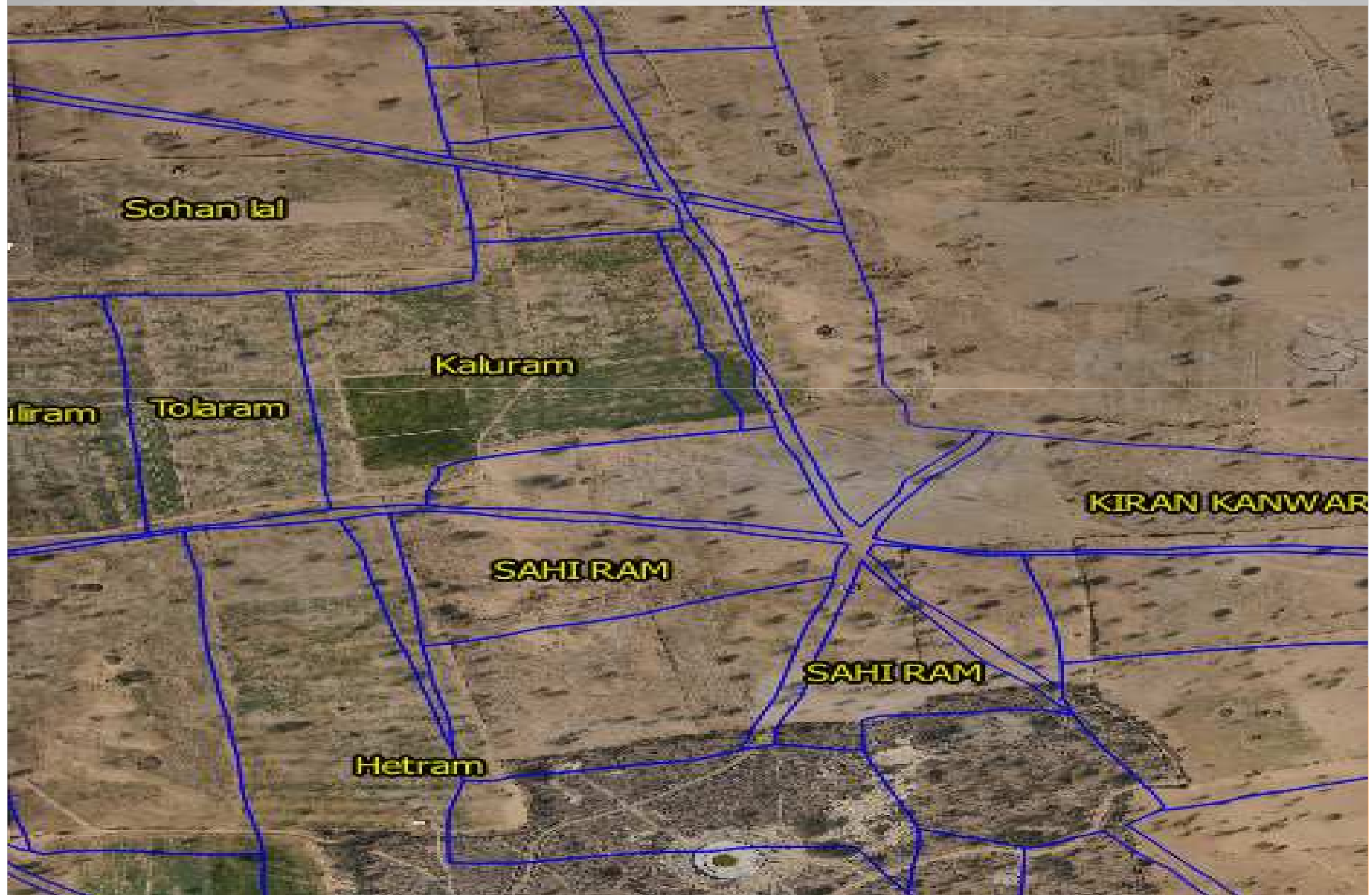
Monitoring Gram

Churu – Rajasthan (Rabi 2014-15)



Monitoring Gram

Churu – Rajasthan (Rabi 2014-15)



WEB PORTAL | UAV BASED FARM MONITORING




Applications Places Google Chrome

Spring Security passw x SkyMet | CCE Visualiz x

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Wed 12:29 PM Geek



Field Visualization


Logout
Hemant Chhonkar

Choose Visualization Type

- ☐ Attendance
- ☒ CCE
- ☐ AREA
- ☐ Last Location

Type District Name

Search Download



Parcel	Khasra No	Farmer
Parcel: 232	Khasra No: 232	Farmer: KESARA RAM
Parcel: 281	Khasra No: 241	Farmer: JEETA RAM
Parcel: 276	Khasra No: 276	Farmer: SAHI RAM
Parcel: 220	Khasra No: 229	Farmer: RAM LAL
Parcel: 26	Khasra No: 20	Farmer: BHAGU RAM
Parcel: 215	Khasra No: 235	Farmer: BHURA
Parcel: 260	Khasra No: 200	Farmer: SAHI RAM
Parcel: 40	Khasra No: 40	Farmer: BHOPAL SINGH
Parcel: 204	Khasra No: 234	Farmer: HANS RAJ
Parcel: 601/247	Khasra No: 661/347	Farmer: SULTAN
Parcel: 777/251	Khasra No: 777/251	Farmer: PULA RAM
Parcel: 255/266	Khasra No: 255/266	Farmer: KESARI
Parcel: 221	Khasra No: 221	Farmer: RAJA RAM
Parcel: 290	Khasra No: 250	Farmer: JEETAN
Parcel: 304	Khasra No: 304	Farmer: RAJESH RAJ
Parcel: 642/269	Khasra No: 642/259	Farmer: MOHAN LAL

*Unsaved Docu... Login Page For ... Java EE - Sprin... [geek@geek/hn... Java EE - share... SkyMet | CCE VI... spring-security-... Pictures

1 / 4

FINAL CROP ESTIMATE – CROP CUTTING EXPERIMENTS



**Acreage & Final yield estimation
(95% accuracy)**



Crop Monitoring

Monitoring Cotton Crop from Sowing till Harvesting

- ☐ **Weather forecasting**
 - ✓ Long Term – Strategic level
 - ✓ Medium Range – Tactical level
 - ✓ Short Range – Operational level
- ☐ **Crop acreage estimation – Remote Sensing & UAV (Unmanned Aerial Vehicle)**
- ☐ **Weather monitoring – effect of weather on target crops**
- ☐ **Crop stage – from sowing till harvesting (biotic & abiotic stress)**
- ☐ **Crop yield forecasting – Survey & CCE based (Crop Cutting Experiments)**


Skymet - Crop Weather Forecast X


← → ↻

projects.skymetweather.com:8081/cropweatherforecast/

⌨ ⚙ ⌂

Crop Weather Forecast





Sign in to analyse the Image processing with user ID and password. Incase ant turbulence, please connect with our technical team.

Login

User Name

jatir


Password

.....

Login

2:28 PM

2/16/2016



Crop Weather Forecast



Analysis

Crop

-- Select Crop --

-- Select Crop --

Guar

Turmeric

Soybean

Castor

Jowar

Maize

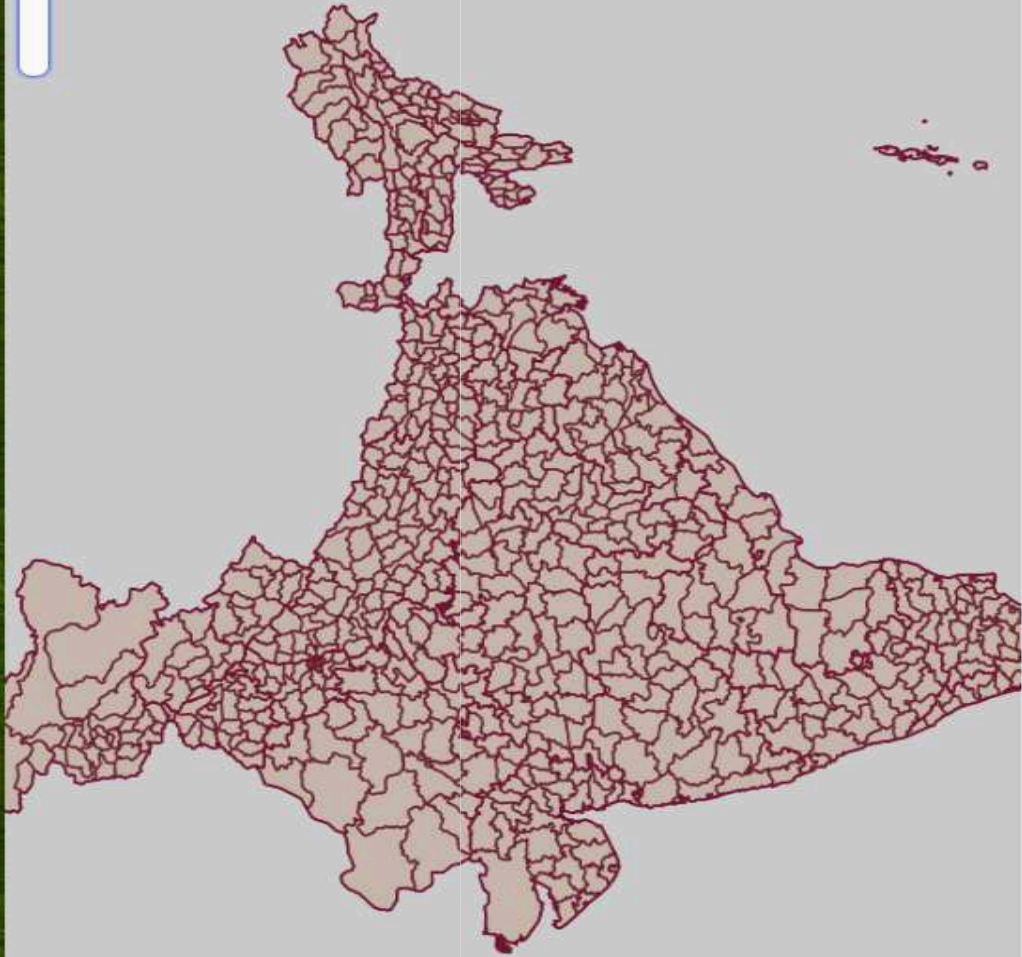
Urd

Tur

Cotton

Search

Download



Crop Weather Forecast



Logout

Analysis

Crop

Cotton

Rainfall

--Select Type--

--Select Type--

Next 7 Days

Next 15 Days

Next 30 Days

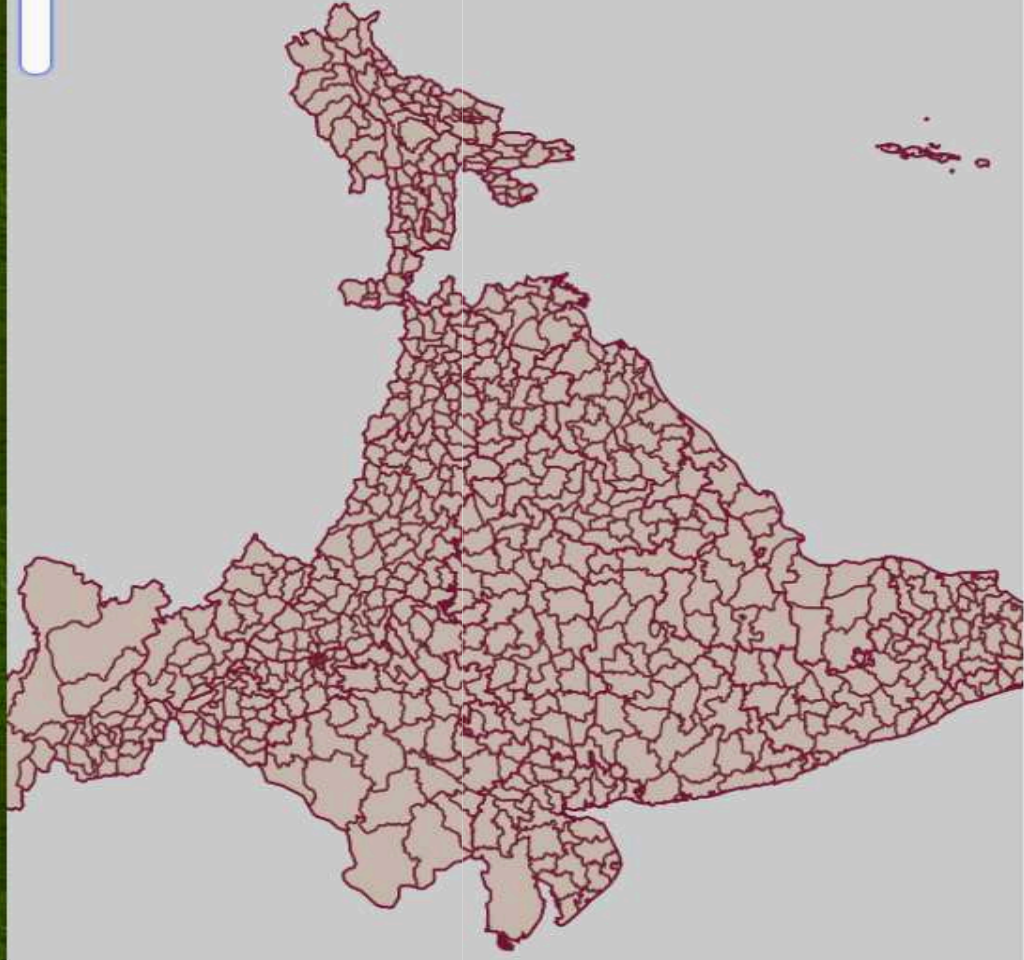
Past 7 Days

Past 15 Days

Past 30 Days

Cumulative Departure

Departure 7 Days



Powered by: skymet

weather.com:8081/cropweatherforecast/welcome.action

Logout

skymet weather wise

234 PM 2/16/2016

Andaman and Nicobar Islands
ANDHRAPRADESH
ARUNACHALPRADESH
ASSAM
BIHAR
Chandigarh
CHHATTISGARH
Dadra and Nagar Haveli
Daman and Diu
DELHI
Goa
GUJARAT
HARYANA
HIMACHALPRADESH
JAMMUANDKASHMIR
JHARKHAND
KARNATAKA

--Select State--

AgriClimaticZone

--Select AgriClimaticZone--

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Crop Weather Forecast



Logout

Analysis

Crop

Cotton

Rainfall

Next 15 Days

State

GUJARAT

AgriClimaticZone

-- Select AgriClimaticZone --

Search

Download



Next 15 Days

15/02/2016 - 28/02/2016

No Rain

Light: (< 10 mm)

Moderate (11 to 50 mm)

Heavy (>50 mm)

Powered by: skymet

Crop Weather Forecast



Logout



Analysis

Crop

Cotton

Rainfall

Next 15 Days

State

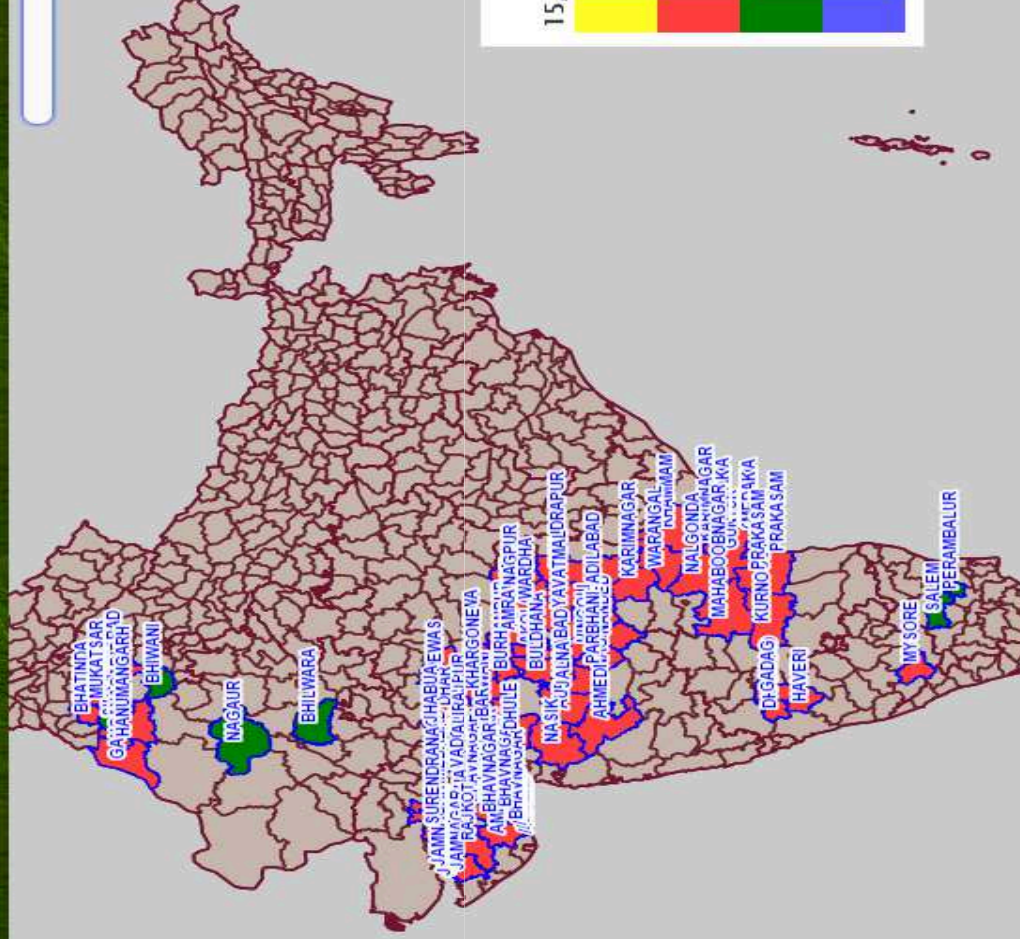
-- Select State --

AgriClimaticZone

-- Select AgriClimaticZone --

Search

Download



Next 15 Days

15/02/2016 - 28/02/2016

No Rain

Light: (< 10 mm)

Moderate (11 to 50 mm)

Heavy (> 50 mm)

Powered by: skymet



Skymet - Crop Weather Forecast

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skymet weather wise

Analysis

Crop

Cotton

Rainfall

Next 15 Days

State

--Select State--

AgriClimaticZone

--Select AgriClimaticZone--

Download

Search

Agri data

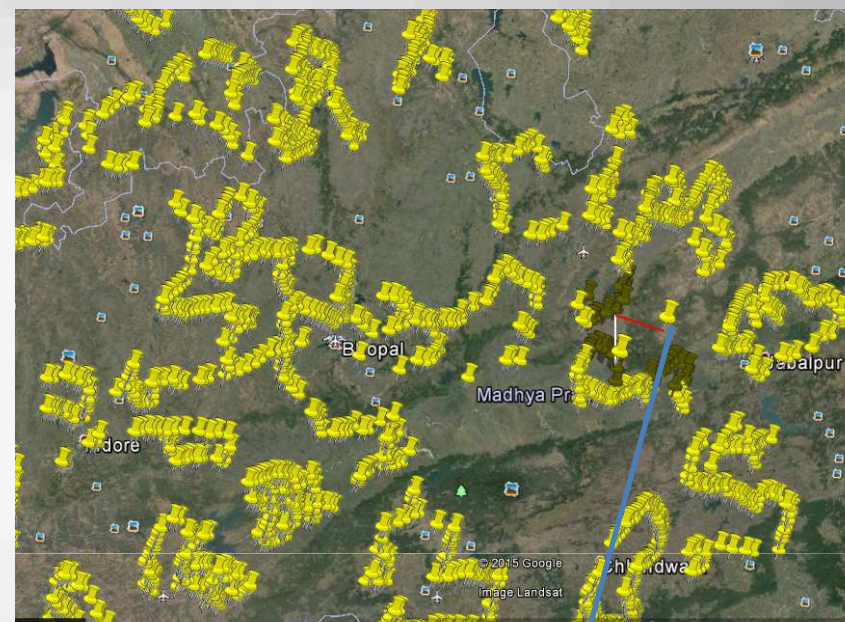
State	Agroclimatic Zone	District	Crop	Normal Acreage ('000 Ha)	Yield (Kg/Ha)	Production ('000 MT)	Current Acreage ('000 Ha)	Expected Yield (Kg/Ha)	Expected Production ('000 MT)
ANDHRAPRADESH	Coastal Andhra Pradesh	Guntur	Cotton	183.96	512	549.45	196.36	662	82.895
ANDHRAPRADESH	Coastal Andhra Pradesh	Krishna	Cotton	58.24	496	173.6	52.55	644	30.314
ANDHRAPRADESH	Coastal Andhra Pradesh	Prakasam	Cotton	64.01	502	210.45	53.72	566	13.796
ANDHRAPRADESH	Rayalaseema	Kurnool	Cotton	162.98	392	401.4	158.55	567	37.572
ANDHRAPRADESH	Telangana	Mahbubnagar	Cotton	213.27	277	150.15	222.12	352	59.49
GUJARAT	Gujarat Region	Ahmedabad	Cotton	470.8	295	346.85	132	750	79.35

Powered by: skymet

237 PM

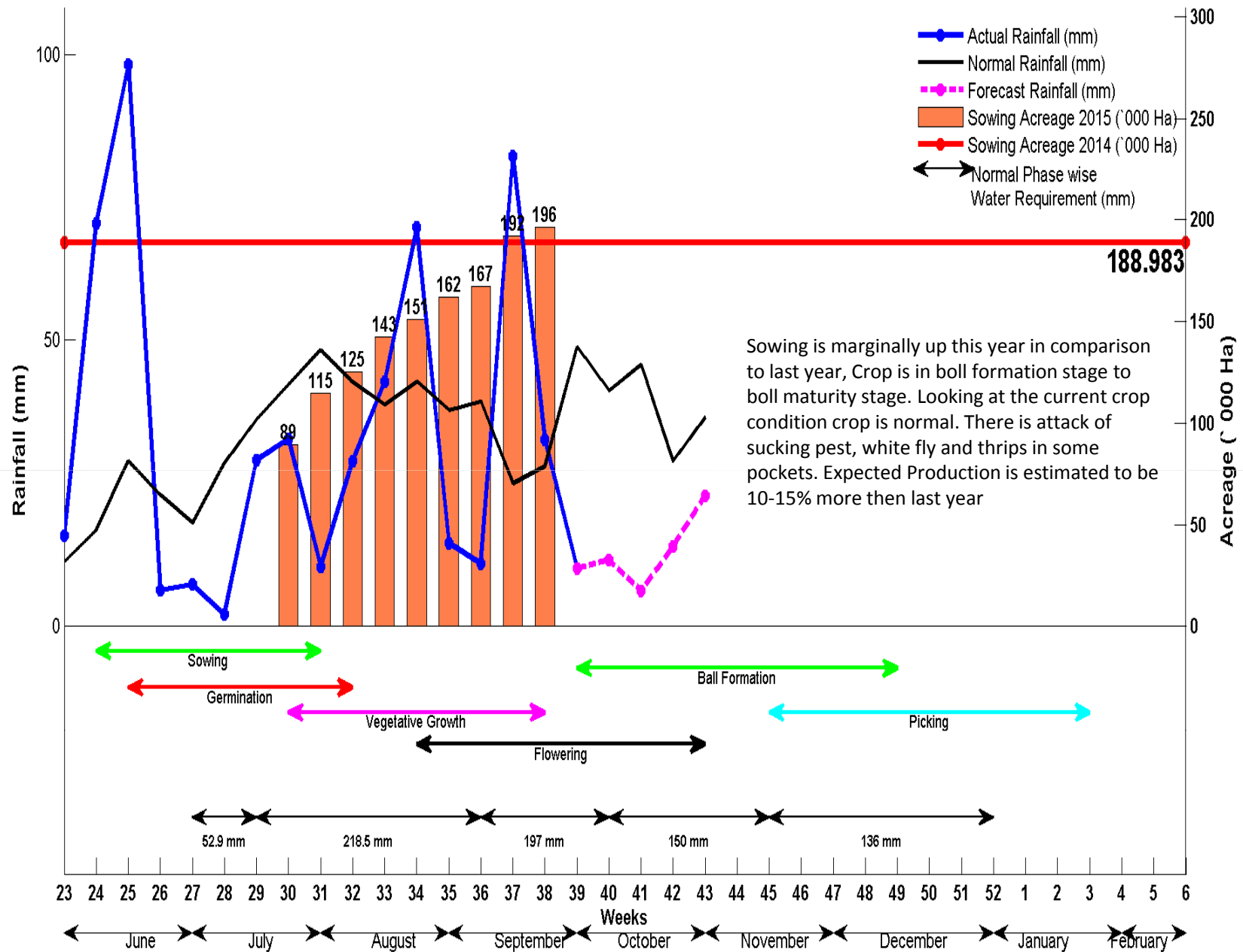
2/16/2016

Cotton Crop Survey – Online monitoring GPS survey



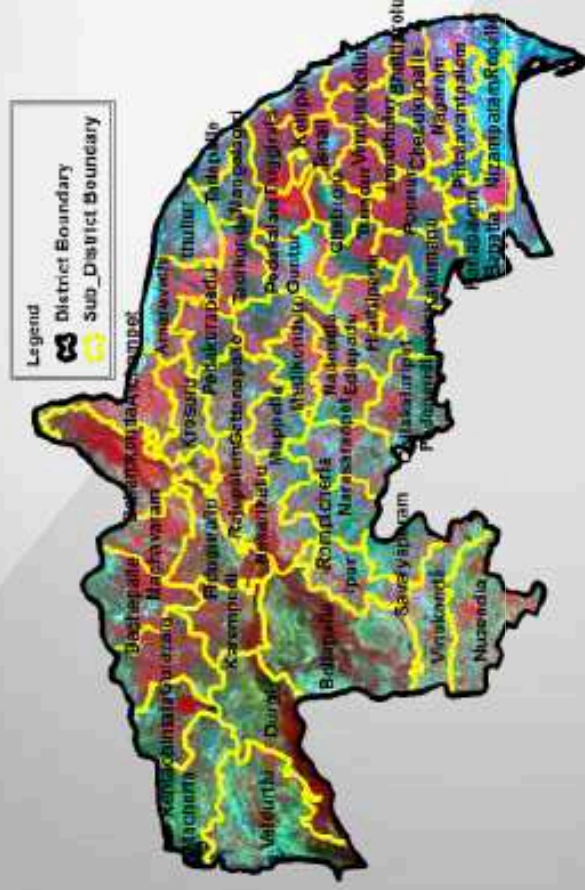
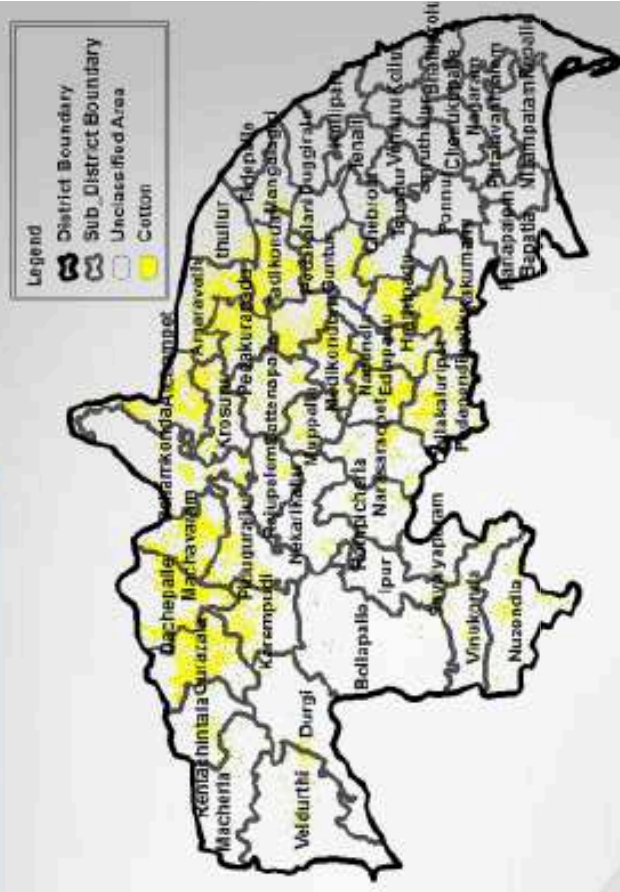
Glencore_Crop_GCP:gid	7758
Glencore_Crop_GCP:nameofsurv	Ajay Pandey
Glencore_Crop_GCP:surveydate	2015/09/15
Glencore_Crop_GCP:nameofcrop	Cotton
Glencore_Crop_GCP:croparea	10.000000000000
Glencore_Crop_GCP:cropheight	3.600000000000
Glencore_Crop_GCP:crophealth	Healthy
Glencore_Crop_GCP:sowingdate	2015/06/17
Glencore_Crop_GCP:comment	Crop condition good but rainfall required at this stage for good production
Glencore_Crop_GCP:x	70.892045000000
Glencore_Crop_GCP:y	22.63328333330
Glencore_Crop_GCP:image	http://survey.skymetweather.com/CropSurvey/images/16-Sep-2015/1b7b8561-a3d6-4a5a-a3c9-596f76bfa584.jpg
Glencore_Crop_GCP:state_name	Gujarat
Glencore_Crop_GCP:district_n	Marvi
Glencore_Crop_GCP:sub_distri	Wankaner

COTTON CROP PROGRESS CALENDAR - GUNTUR (ANDHRA PRADESH)





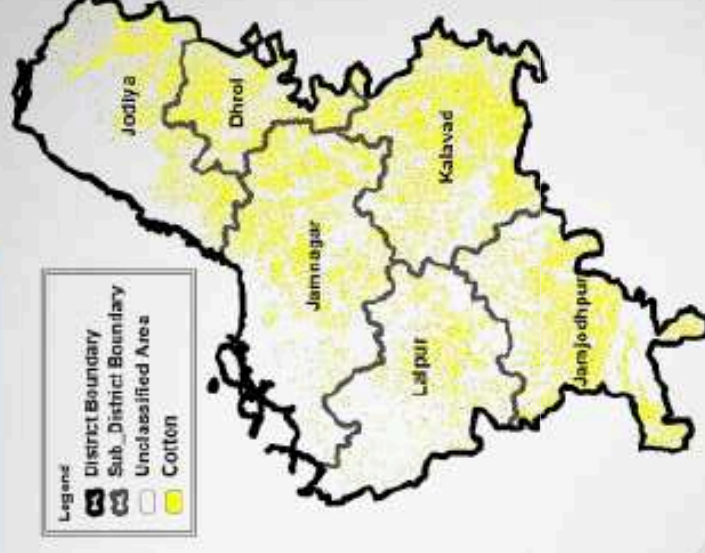
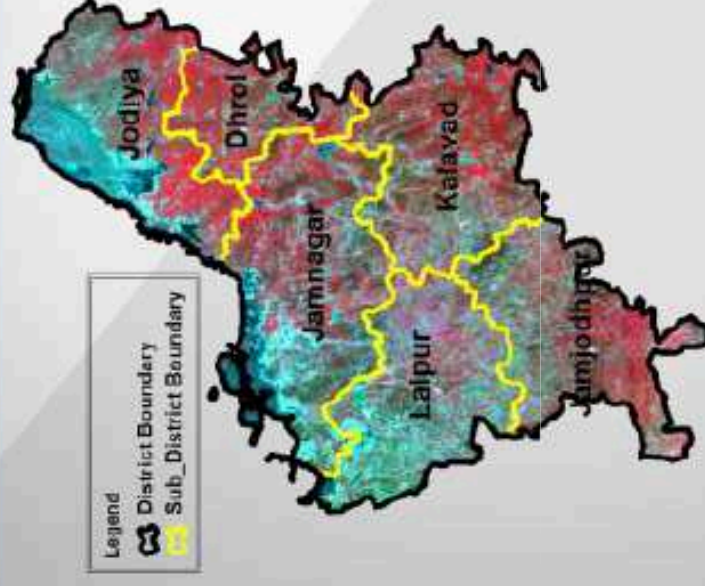
STUDY AREA, GUNTUR, ANDHRA PRADESH



Sub District	Cotton
Dachepalle	12,685
Gurazala	12,130
Rentachintala	2,305
Macherla	863
Veldurthi	1,826
Durgi	994
Chebrolu	761
thullur	2,485
Edlapadu	5,627
Repalle	0
Narasaraopet	3,415
Bollapalle	400
Atchamper	8,603
Pidugurallu	5,976
Kakumanu	1,486
Hrathipadu	6,355
Pedakalani	1,004
Mangalagiri	1,160

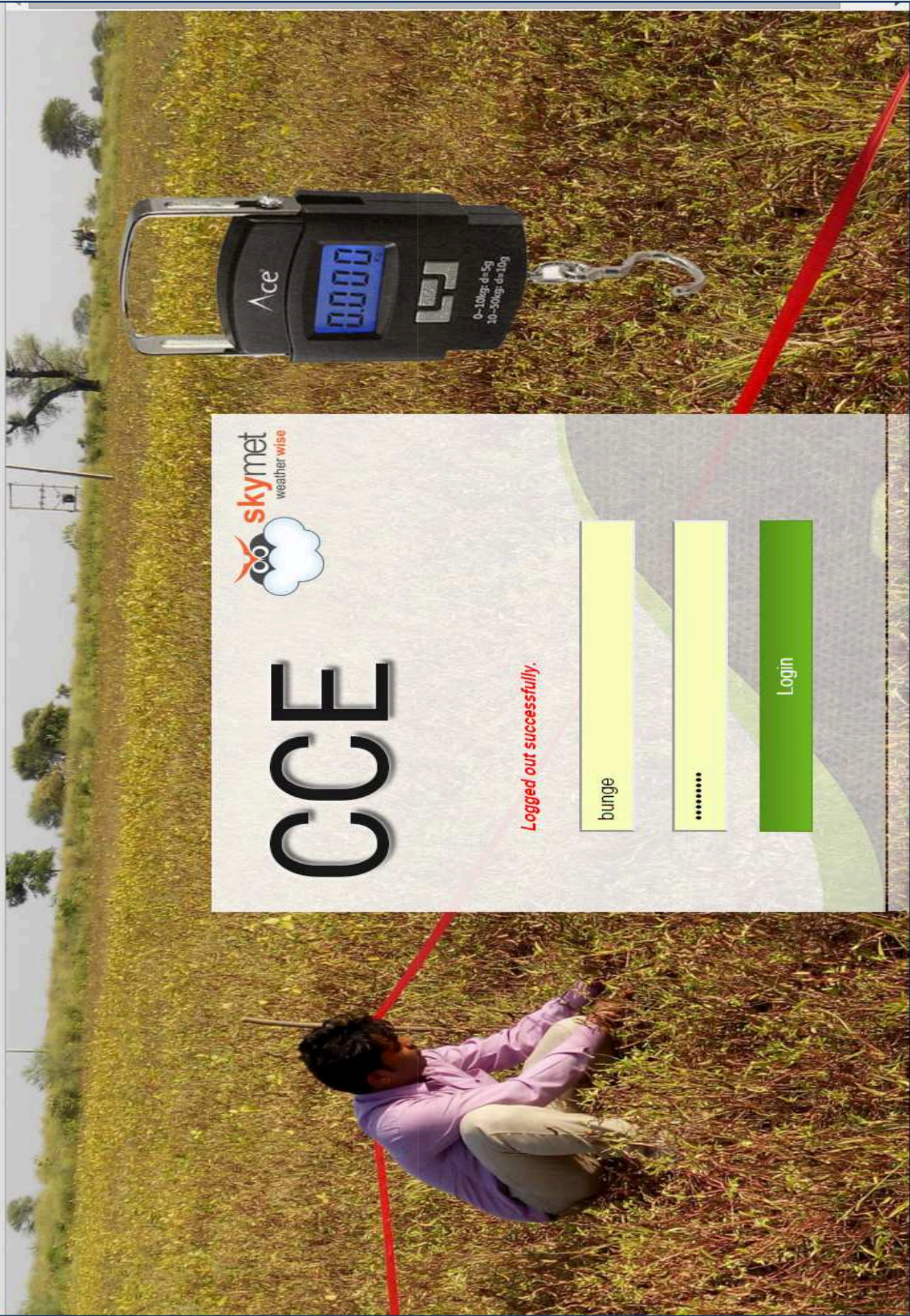
Satellite Image –AWiFS
Acquisition Date – 14th Oct 2015
District – Guntur
Resolution – 56M
Acreage – Cotton – Ha 177,835

STUDY AREA, JAMNAGAR, GUJARAT



Sub District	Cotton
Jodiya	27,031
Kalavad	51,680
Jamjodhpur	37,256
Lalpur	19,115
Dhrol	24,398
Jamnagar	40,018
Total of All Sub Districts (Ha)	199,498

Satellite Image –LANDSAT
 Acquisition Date – 6th Oct 2015
 District – Jamnagar
 Resolution – 30M
 Acreage – Cotton – Ha 199,498

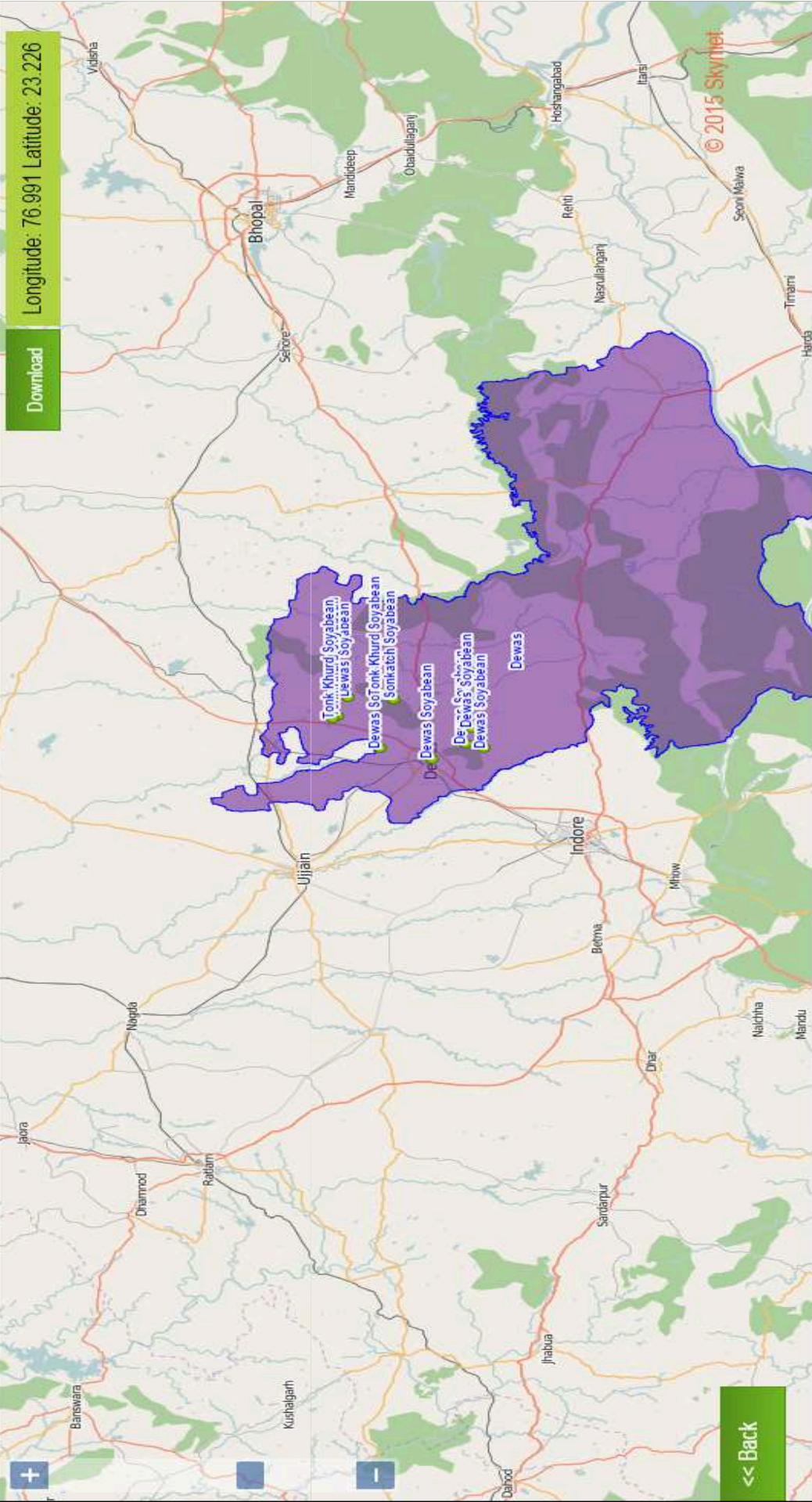




Field Visualization

CCE

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CCE

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Field Visualization

Soyabean

Dhar

view

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State	District	Sub District	Block	Village	Gram Panchayat	Nyay Panchayat	Crop	Farmer Name	Farmer Mobile No.	Area	Size	Yield1	Yield2	Yield3	Yield4	Yield5
Madhya Pradesh	Dhar	Badnawar	Badnawar	Pitgara	NA	NA	Soyabean	Sanjay Patel	9089204120	NA	5x5	1.02	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Badnawar	Badnawar	Pitgara	NA	NA	Soyabean	Sanjay Kumar	9089204120	NA	5x5	1.20	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Badnawar	Badnawar	Pitroda	NA	NA	Soyabean	Kaliram	9083756061	NA	5x5	0.78	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Badnawar	Badnawar	Barali	NA	NA	Soyabean	Kalash	9977076155	NA	5x5	1.02	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Manawar	Manawar	Harumantiya	NA	NA	Soyabean	Deepak Kumar	9179144030	NA	5x5	0.72	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Manawar	Manawar	Rangaon	NA	NA	Soyabean	Uday Singh	9893632005	NA	5x5	0.76	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Manawar	Manawar	Harumantiya	NA	NA	Soyabean	Deepak Kumar	9179144030	NA	5x5	1.00	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Manawar	Manawar	Nunara Sadak	NA	NA	Soyabean	Mangilal	9752617255	NA	5x5	1.75	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Nalcha	Nalcha	Gulwa	NA	NA	Soyabean	Rahul Kumar	9981772727	NA	5x5	0.71	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Nalcha	Nalcha	Nayapura	NA	NA	Soyabean	Ramesh	9977407772	NA	5x5	0.80	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Nalcha	Nalcha	Bagli	NA	NA	Soyabean	Manoj Kara	9713558962	NA	5x5	0.50	0.00	0.00	0.00	0.00
Madhya Pradesh	Dhar	Nalcha	Nalcha	Ratwa	NA	NA	Soyabean	Krishna Kumar	9753211467	NA	5x5	0.76	0.00	0.00	0.00	0.00

<< Back

Cotton CCE in Progress.....



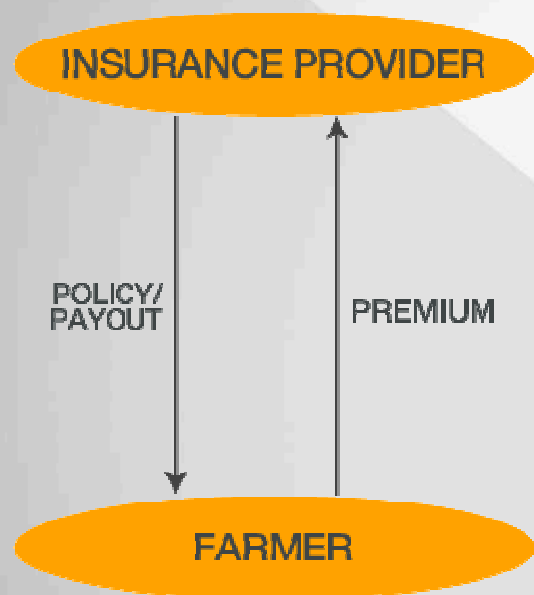


Crop Risk Management

CUSTOMISED CROP RISK MANAGEMENT

Weather Based Crop Insurance

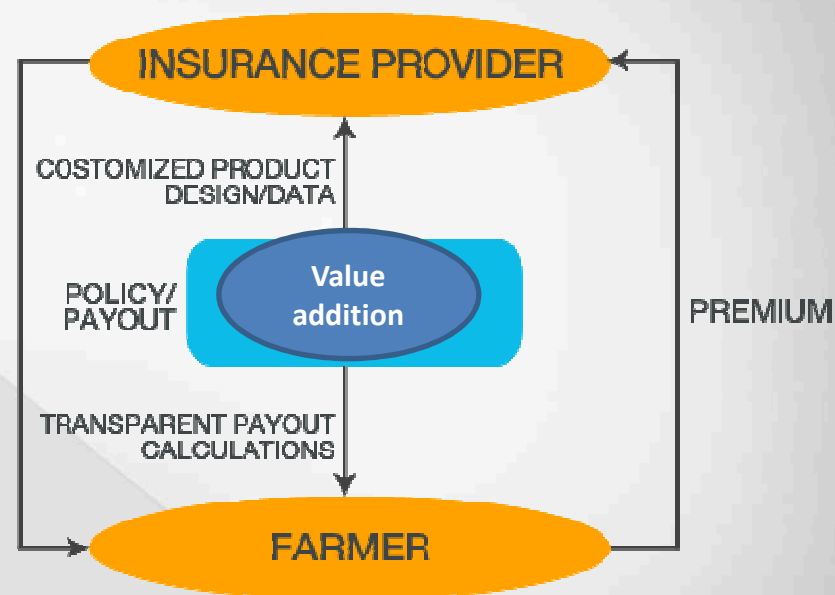
EXISTING



Drawbacks:

- Inadequate product
- Cryptic payout calculations
- Opaque payouts
- Mistrust on insurance

PROPOSED



Benefits:

- Customized product
- Transparent payout calculations
- Equitable payouts
- Trust build-up on insurance

Crop Risk Management



Particular	Features
Customized Crop Insurance	<ul style="list-style-type: none">✓ Weather based customized crop insurance products✓ Transparent Payout calculations✓ Access to live weather data✓ Equitable payout
Weather Derivative based Crop Insurance	<ul style="list-style-type: none">✓ Companies having direct interest in agriculture✓ Companies pay out premium and payouts are paid directly to company✓ Seed companies involved in contract farming / seed production programs

PRODUCT CUSTOMIZATION (PEPSICO) – POTATO (PATIALA)

Earlier Product

11266	
Crop	Potato
Location	Patiala
Data Provider	INGEN Technologies P Ltd
Excess Rainfall Index	
Date From	1-Jan
Date to	20-Feb
Excess Rainfall Strike	Maximum of Cumulative 10 days
Strike_1 > (mm)	17
Strike_2 > (mm)	87
Exit (mm)	187
Notional (Rs. / mm)_1	72
Notional (Rs. / mm)_2	249.6
Maximum Payout (Rs.)	30000
Total Maximum Payout (Rs.)	30000
Frost Loss Index	
Date From	15-Dec
Date to	10-Jan
Frost Index Definition : (Multiple events)	Single day minimum temperature below the strike value
Strike	Notional (Rs./°C)
3.5 > X >= 1.5	225
1.5 > X >= 0	600
0 > X >= -2	1200
Maximum Payout (Rs.)	30000
Total Sum Insured (Rs/Acre)	60000
Premium Rs./Acre	4150

Modified Product

Crop	Potato	
Location	Patiala	
Data Provider	Skymet	
Excess Rainfall Index		
Date From	1-Jan	
Date to	20-Feb	
Excess Rainfall Strike	Maximum of Cumulative 10 days Rainfall > 17	
Strike (mm)	Fixed Payout	Variable Payout (Rs. / mm)
17	0	72
87	5040	249.6
Exit (mm)	187	
Maximum Payout (Rs.)	30000	
Total Maximum Payout (Rs.)	30000	
Frost Loss Index		
Date From	15-Dec	
Date to	10-Jan	
Frost Index Definition : (Multiple events)	Single day minimum temperature below the strike value.	
Strike (<=)	Payout (Rs.)	
3.5	100	
2.5	225	
1.5	450	
0.5	1050	
-0.5	1950	
-1.5	3150	
Maximum Payout (Rs.)	30000	
Total Sum Insured (Rs/Acre)	60000	
Premium Rs./Acre	3652	

TRANSPARENCY – INFORMATION & PAYOUTS



NAME : RAJESH KUMAR
F NAME : TAPESHWAR SHARMA
ADDRESS : VILL- BALSA, POST- BALSA
DIST- BALSA, ASSAM
PLAN : XYZ
STATION :

[ADD STATION](#)



TOTAL PAYOUT TILL DATE
₹ 5000

TEHSIL SUMMARY

STATION NAME	LEAST MIN(°C)	LEAST MAX(°C)	TOTAL RAINFALL
BALSA	26.25	35.32	28.69
BARAMA	26.25	35.32	28.69
DHARAMDHAMA	26.25	35.32	28.69
JALAH	26.25	35.32	28.69
NAGRIJULI	26.25	35.32	28.69
TAMULPUR	26.25	35.32	28.69

CHANGE STATION

DATE/TIME	TAvg(°C)	TMax(°C)	TMin(°C)	Rh(%)	WS Avg (kmph)	WS Max (kmph)	WS Min (kmph)	WDir	Rainfall (mm)	Battery (V)	Charging	Network	Reason
09 JUL 2014 00:00	26.96	27.03	26.84	95	0.04	3.63	0.00	NW	0.00	3.94	0	0	
09 JUL 2014 01:00	26.67	26.04	26.84	96	0.00	0.00	0.00	NW	0.00	4.00	0	0	
09 JUL 2014 02:00	26.67	26.78	26.84	96	0.00	3.63	0.00	NW	0.00	3.95	0	0	
09 JUL 2014 03:00	26.76	26.81	27.25	96	0.02	0.00	0.00	NW	0.00	3.94	0	0	
09 JUL 2014 04:00	26.34	26.60	27.89	97	0.02	3.78	0.00	NNE	0.00	3.92	0	0	
09 JUL 2014 05:00	26.32	26.38	26.84	94	0.05	3.72	0.00	NNE	0.00	3.85	0	0	
09 JUL 2014 06:00	26.67	27.03	27.04	93	0.06	3.63	0.00	NNE	0.00	3.82	0	0	
09 JUL 2014 07:00	27.77	28.25	26.84	92	0.07	3.00	0.00	NW	0.00	3.80	0	0	
09 JUL 2014 08:00	28.96	29.75	26.85	90	0.03	3.63	0.00	NW	0.00	3.70	0	0	
09 JUL 2014 09:00	28.84	29.39	26.84	85	0.03	2.98	0.00	NW	0.00	3.50	0	0	
09 JUL 2014 10:00	27.94	32.39	28.84	80	0.04	3.63	0.00	NW	0.00	3.40	0	0	
09 JUL 2014 11:00	29.99	32.37	27.00	75	0.05	3.63	0.00	NNE	0.00	3.34	0	0	
09 JUL 2014 12:00	31.22	32.38	26.84	72	0.05	3.63	0.00	NNE	0.00	3.30	0	0	
09 JUL 2014 13:00	32.33	35.36	26.95	70	0.02	3.92	0.00	NNE	0.00	3.15	0	0	
09 JUL 2014 14:00	33.01	35.03	27.10	85	0.04	2.92	0.00	NW	0.00	3.00	0	0	
09 JUL 2014 15:00	30.22	33.03	28.80	87	0.04	3.63	0.00	NW	0.00	2.98	0	0	

Mitigating Crop Risk

Real Time Crop Advisory

Real Time Crop Advisory

**CURRENT WEATHER
SHORT RANGE FORECAST
(AT BLOCK/TALUKA/DISTRICT LEVEL)**



**AGRI-DOMAIN
EXPERTISE**



**REAL TIME
AGRO-ADVISORY**

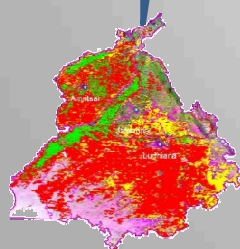


Paddy (Pusa Basmati 1121) Real Time Crop Advisory



Current Weather & Forecast

GIS image



Actual Condition
Temp-43 ° C ; RH-20%
No Rain / Moisture stress

Crop Advisory

- 1) Drain water from nursery and fill fresh water on daily basis
- 2) Delay Transplanting by -7 days



- ✓ Sales Employee
- ✓ Marketing person
- ✓ Distribution person
- ✓ Seed Production



- ✓ Farmers
- ✓ Retailers
- ✓ Dealers

BENEFITS

Farmers

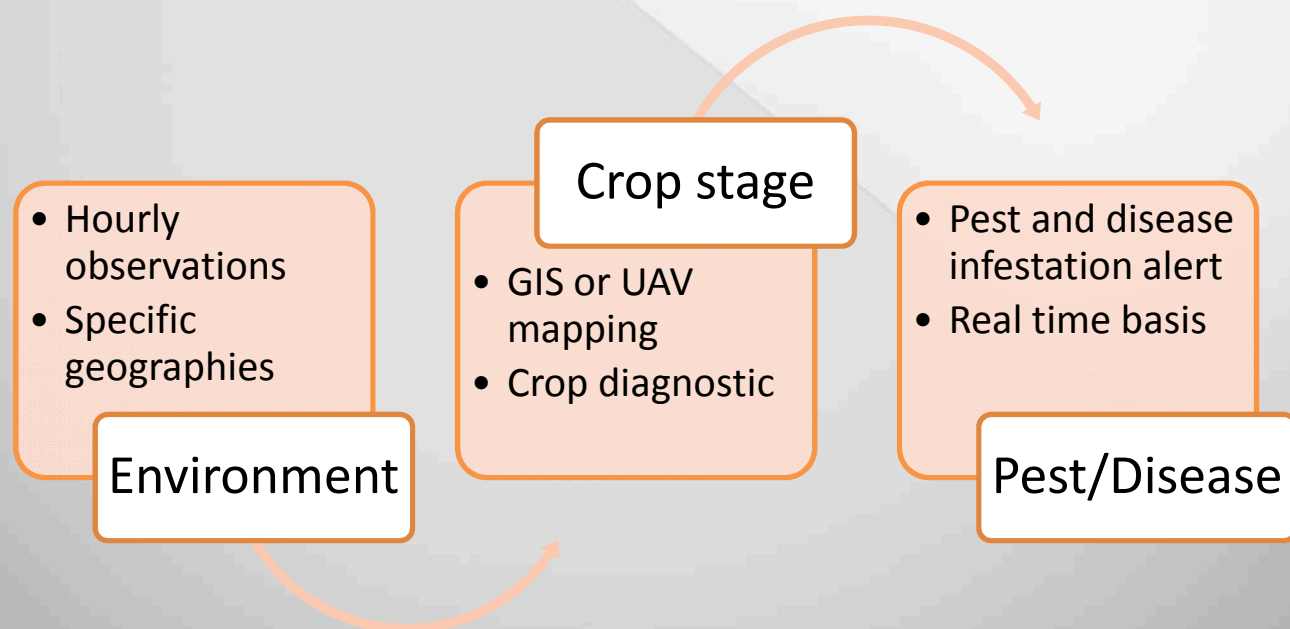
- ✓ **Scheduling crop specific agronomic practices** based on weather / forecast
- ✓ **Scheduling Fertilizer and herbicide application**
- ✓ **Harvesting & Post harvest management advisories**
- ✓ **Strengthening brand equity thru realistic advisories**

Pest Forecasting Model

PEST FORECAST MODEL

❖ The model combines three parameters of the disease triangle:

- Crop (host)
- Pathogen (present at field)
- Environment (monitored by Automated Weather Station)



BROWN PLANT HOPPER – PADDY

Crop stage information



Paddy

Susceptible Host

Disease

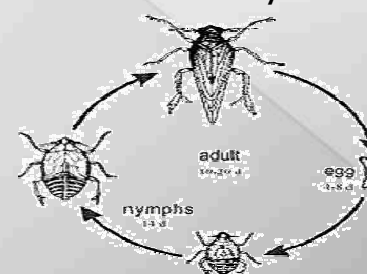
Conductive Environment

Pathogen

Brown Plant Hopper (BPH)

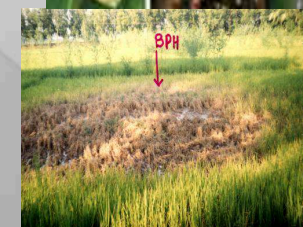


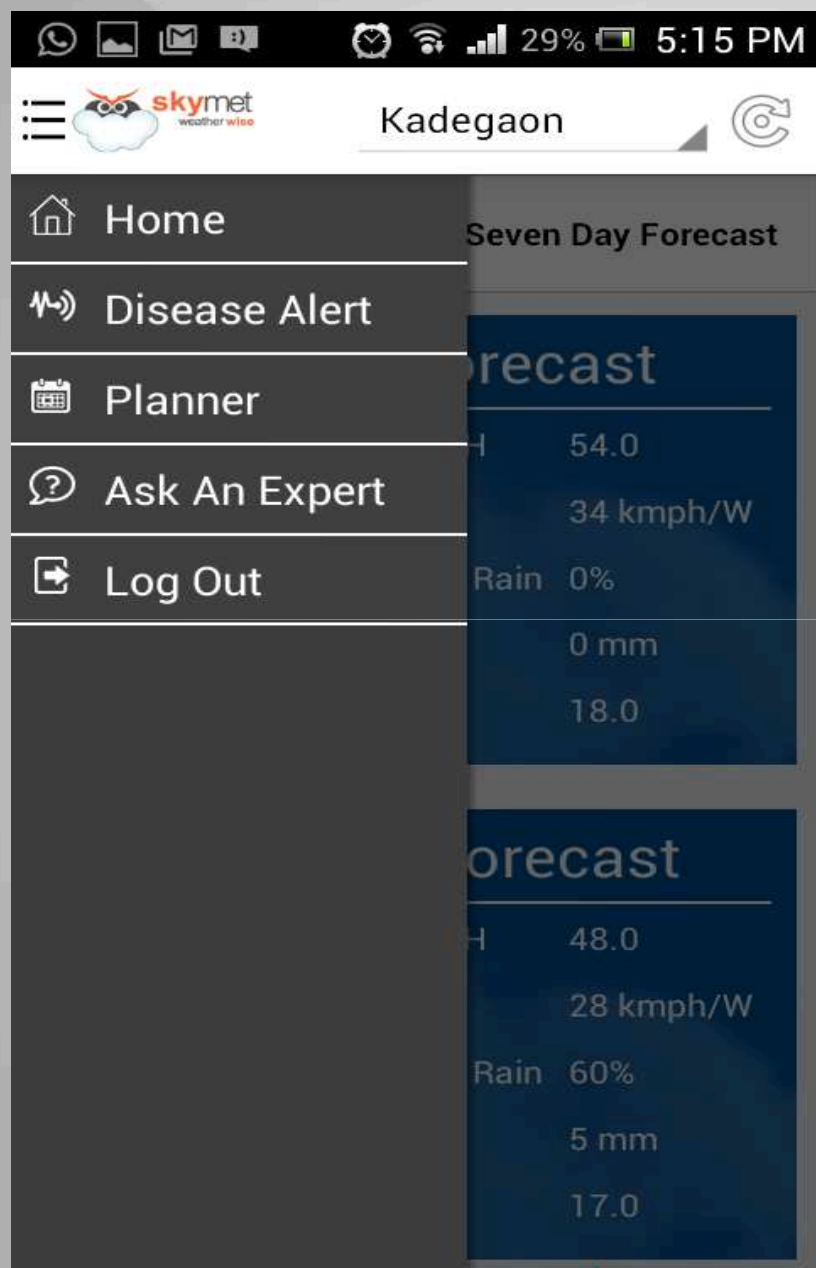
BPH Life Cycle



Eggs Hatchability highest at 25°C
 BPH Population Max 28-30°C
 RH >70
 High Nitrogen levels

Monitor using AWS





Real Time Crop Advisory through Mobile phone

- Weather forecast (7 days locational weather data)
- Disease alert (7 days alert)
- To do list (Plan calendar for management)
- Ask an expert (Take field photo & share with expert)

Forecast				Seven Day Forecast			
Today				 RH	54.0		
 32° 22°				 Wind	34 kmph/W		
				 Rain	0 mm		
Thursday July 16				 RH	48.0		
 31° 22°				 Wind	28 kmph/W		
				 Rain	5 mm		
Friday July 17				 RH	57.0		
 31° 21°				 Wind	31 kmph/SW		
				 Rain	5 mm		
Saturday July 18				 RH	91.0		
 23° 21°				 Wind	23 kmph/SW		
				 Rain	1 mm		
Sunday July 19				 RH	90.0		
 24° 21°				 Wind	24 kmph/SW		
				 Rain	2 mm		

• Weather forecasting

Data includes:

1. Hourly data of temperature
2. Hourly %RH
3. Wind speed
4. Rain chance %

Weather Forecast



Logout

WEATHER | DISEASE ALERT | PLANNER | ASK AN EXPERT

Select Your Location :

Current Forecast



32.0° /
22.0°

Average RH 54.0
Wind 34.0 kmph
Chance Of Rain 0 %
Rainfall 0.0 mm
Dew Point 18.0°C

Next Day Forecast



31.0° /
22.0°

Average RH 48.0
Wind 28.0 kmph
Chance Of Rain 60 %
Rainfall 5.0 mm
Dew Point 17.0°C

Seven Days Forecast



16-Jul-2015

31.0°C / 22.0°C

RH 48.0
Wind 28.0 kmph/W
Rain 5.0 mm



17-Jul-2015

31.0°C / 21.0°C

RH 57.0
Wind 31.0 kmph/SW
Rain 5.0 mm



18-Jul-2015

23.0°C / 21.0°C

RH 91.0
Wind 23.0 kmph/SW
Rain 1.0 mm



19-Jul-2015

24.0°C / 21.0°C

RH 90.0
Wind 24.0 kmph/SW
Rain 2.0 mm



20-Jul-2015

24.0°C / 21.0°C

RH 91.0
Wind 30.0 kmph/S
Rain 0.0 mm

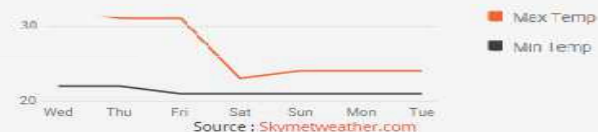


21-Jul-2015

24.0°C / 21.0°C

RH 92.0
Wind 28.0 kmph/S
Rain 8.0 mm

Weekly Temperature



Weekly Relative Humidity



Weekly Rain





WhatsApp, Email, Messages, Alarm, Wi-Fi, Signal, 29%, 5:15 PM



Kadegaon



Latitude/Longitude : 74.33°/17.30°

Wednesday

15th
July

Thursday

16th
July

Friday

17th
July

Saturday

18th
July

Sunday

19th
July

Monday

20th
July

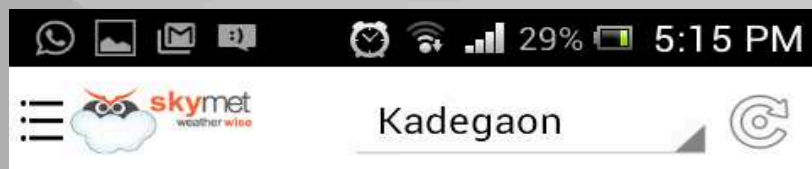
Tuesday

21st
July

- No Risk
- Low Risk
- Medium Risk
- High Risk
- Very High Risk

Disease alert (7 days alert based on forecast and updated on real time basis based on AWS data)

Location wise weekly disease alert and its intensity



Ask An Expert

Write your Query

Send

PEPSICO | 2015-07-13 17:31:46.0

Common Pests and Diseases in potato

Symptoms

Irregularly shaped necrotic spots on leaves which may have a small area of collapsed tissue surrounding it; water-soaked dark green to black lesions on stems; leaves and petioles completely rotted; severely affected plants may have an acrid odor; red-brown lesions on tubers extending several centimeters into tissue; lesions may be

Ask an expert (Take field photo & share with expert)

- Photos can be uploaded & internally sent to expert for remedies.
- Immediate data sharing & acting on the remedies are key initiative for LB management



RISK MITIGATION POINTERS

- 1. Weather Risk** – long, medium & short range weather forecast
- 2. Accurate information on Increase / decrease of crop acreage in geography**
- 3. Farmer Crop Risk Management** – area specific crop Insurance products
- 4. Realistic crop advisories & Pest Forecasting tools**
- 5. Monitoring Crop from sowing till Harvesting**

Realistic & Better Production forecast



**THANK YOU FOR YOUR TIME
AND CONSIDERATION**