Water Resource & Management Strategies

National Conference on
Integrated Water Resource Management for enhancing Farmers' Income
March 22, 2017, Hotel Park, New Delhi

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Chief Business head – Agribusiness

Skymet Weather Services Pvt Ltd.
1/6 th of country’s groundwater supply overused

663 million live without safe water

> 25% India’s population affected by drought last year

80% of global population faces threats to its water security

63 million lacks proper access to water

2016 global temperatures record high for 3rd year in row
Climate Change – India Perspective
There have been alternating periods extending to 3-4 decades with less and more frequent weak monsoons over India.

- In last 146 years (1871 – 2016)
- 19 were major flood years
- Drought occurred in 26 years

Image courtesy: tropmet.res.in
We are in drought epoch
- In last 50 years, **22 years** were the Good Monsoon years with rainfall 101% to 109%.

- During good monsoon out of 650 districts, **30% (195) districts** are at risk of drought or flood.
- In last 11 years, 7 were normal to good monsoon years.
- Average (JJAS) monsoon activity / rainfall is decreasing in AP, MH, KTK, GJ, Bihar, HR & PB.
- Monsoon activity is Stable in MP, RJ & TN.
• Karnataka, Kerala and Tamil Nadu, volatility of being deficient is very high

• Under the “good monsoon” year, Maharashtra is the least volatile state and drought probability is quiet low.

Note: Districts receiving <80% of average rainfall are categorized as deficient districts
Under the good monsoon year, Karnataka, Kerala, Tamil Nadu & Maharashtra has the highest risk.

Note: Districts receiving >120% of average rainfall are categorized as excess districts
Increase / decrease in frequency of rainy days during 1901-2005

- Number of rainy days are reducing over most part of the country
- However number of rainy days are increasing in peninsular India especially over AP and some parts of Karnataka.
Number of heavy rainfall days are increasing over most parts of the country.

Extreme rainfall and hence flood risks are increasing significantly in the country except some parts of central India.
❖ ENSO-neutral conditions are present

❖ ENSO-neutral conditions are favored to continue through at least the Northern Hemisphere April’ 2017,

❖ Chances are high for developing El Nino conditions in pacific
Overall, we are in better position now as compared to last year.
### Current Status of Reservoir as compared to last 10 years

#### States in Good condition

<table>
<thead>
<tr>
<th>State</th>
<th>Reservoir Departure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajasthan</td>
<td>3.7</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>22.2</td>
</tr>
<tr>
<td>Odisha</td>
<td>19.7</td>
</tr>
<tr>
<td>West Bengal</td>
<td>14.5</td>
</tr>
<tr>
<td>Tripura</td>
<td>180.0</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>4.6</td>
</tr>
<tr>
<td>Uttar Pradesh</td>
<td>52.7</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>50.1</td>
</tr>
<tr>
<td>Chhattisgarh</td>
<td>22.1</td>
</tr>
<tr>
<td>Telangana</td>
<td>49.8</td>
</tr>
</tbody>
</table>

#### States in Bad condition

<table>
<thead>
<tr>
<th>State</th>
<th>Reservoir Departure (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Himachal Pradesh</td>
<td>-22.6</td>
</tr>
<tr>
<td>Gujarat</td>
<td>-18.5</td>
</tr>
<tr>
<td>Uttarakhand</td>
<td>-39.1</td>
</tr>
<tr>
<td>Andhra Pradesh</td>
<td>-69.7</td>
</tr>
<tr>
<td>Karnataka</td>
<td>-41.8</td>
</tr>
<tr>
<td>Kerala</td>
<td>-34.0</td>
</tr>
<tr>
<td>Tamil Nadu</td>
<td>-85.3</td>
</tr>
</tbody>
</table>
Strategies for Climate Resilience in Agriculture
Mitigating Weather Risk

Weather Forecast
Weather forecast & Monitoring

❖ Long Term Weather Forecast – 3/4 months ahead
❖ Medium Term Forecast – 15/30 days ahead
❖ Short Term Forecast – 7 days ahead
❖ Weather Alerts – 24/72 Hrs ahead
❖ Live Weather Data – Hourly Live
❖ Real Time Weather – Live
4000+ AWS Locations

17 States

Head Office: Noida

Regional Office(S): (Jaipur, Mumbai)
Live Weather Monitoring

Live Lightning and Thunderstorm Alerts

Real Time Rain
Blue marks are depicting the places where rain happening at real time.
Real Time Crop Advisories

- **CURRENT WEATHER SHORT RANGE FORECAST (AT BLOCK/TALUKA/DISTRICT LEVEL)**
- **AGRI-DOMAIN EXPERTISE**

**REAL TIME AGRO-ADVISORY**
Pest Forecasting Model
BPH Forecasting – Paddy

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

Monitor using AWS

Conducive Environment

Susceptible Host

Crop stage information

Disease

Pathogen

Paddy

Brown Plant Hopper (BPH)

BPH Life Cycle
Crop Risk Management
✓ No Rainfall was observed from 3\textsuperscript{rd} week of Oct till Dec’16

✓ Temperature was above normal by 4 to 5 degree in month of January and Feb is also above normal.

✓ Early sown crop is normal however mid & late sown crop is under stress
**CUSTOMISED CROP RISK MANAGEMENT SOLUTIONS**

**Weather Based Crop Insurance**

**EXISTING**

- **INSURANCE PROVIDER**
- **POLICY/PAYOUT**
- **FARMER**
- **PREMIUM**

**PROPOSED**

- **INSURANCE PROVIDER**
- **CUSTOMIZED PRODUCT DESIGN/DATA**
- **POLICY/PAYOUT**
- **TRANSPARENT PAYOUT CALCULATIONS**
- **FARMER**
- **PREMIUM**
- **Value Addition**

**Drawbacks:**
- Inadequate product
- Cryptic payout calculations
- Opaque payouts
- Mistrust on insurance

**Benefits:**
- Customized product
- Transparent payout calculations
- Equitable payouts
- Trust build-up on insurance
<table>
<thead>
<tr>
<th>Crop</th>
<th>Maize</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>District</strong></td>
<td>East Godavari</td>
</tr>
<tr>
<td><strong>Taluka</strong></td>
<td>All locations</td>
</tr>
<tr>
<td><strong>Season</strong></td>
<td>Rabi</td>
</tr>
</tbody>
</table>

**flowering stage cover:** Maximum temperature (which may cause premature pollen shedding)

**Cover definition:** No. of days of maximum temperature above benchmark for the phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Phase 1</th>
<th>Phase 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>15-Feb-16</td>
<td>22-Feb-16</td>
</tr>
<tr>
<td>To</td>
<td>21-Feb-16</td>
<td>27-Feb-16</td>
</tr>
<tr>
<td>Benchmark (degree centigrade)</td>
<td>34</td>
<td>36</td>
</tr>
<tr>
<td>Strike (days) &gt;=</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**Exit (days)** | 12
**Notional (Rs/days)** | 556
**Payout (Rs)** | 5000
**Total payout** | 5000

**Disease conducive cover:** Fruit setting stage / maturity / pre harvest

**Cover definition:** days confirming to rainfall > 10mm and relative humidity at 8:00 am > 80%

<table>
<thead>
<tr>
<th>Phase</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>From</td>
<td>1-Mar-15</td>
</tr>
<tr>
<td>To</td>
<td>31-Mar-15</td>
</tr>
<tr>
<td>Strike (days) &gt;=</td>
<td>3</td>
</tr>
<tr>
<td>Exit (days)</td>
<td>10</td>
</tr>
<tr>
<td>Notional (Rs/day)</td>
<td>714</td>
</tr>
<tr>
<td>Payout (Rs)</td>
<td>5000</td>
</tr>
<tr>
<td>Total payout</td>
<td>5000</td>
</tr>
</tbody>
</table>

**Total Payout** | 10000
**Premium rate (exclusive of taxes)** | 1000
## TEHSIL SUMMARY

<table>
<thead>
<tr>
<th>STATION NAME</th>
<th>LEAST MIN(°C)</th>
<th>LEAST MAX(°C)</th>
<th>TOTAL RAINFALL</th>
</tr>
</thead>
<tbody>
<tr>
<td>BALSA</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
<tr>
<td>BARAMA</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
<tr>
<td>DHARAMDHAMA</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
<tr>
<td>JALAH</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
<tr>
<td>NAGRIJULI</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
<tr>
<td>TAMULPUR</td>
<td>26.25</td>
<td>35.32</td>
<td>28.69</td>
</tr>
</tbody>
</table>

## TOTAL PAYOUT TILL DATE

₹ 5000
THANK YOU

for more info pl contact
info@skymetweather.com

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