Ghana Space:
Cropwatch Workshop
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Abuja, Nigeria

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Agriculture in Ghana

Agriculture accounts - 28% of GDP
   Employs – About 50% of labour force,
   Irrigated lands - 0.2%

Cash crops:
   Cocoa,
   oil palm,
   rubber

Major staples:
   maize,
   cassava,
   plantain,
   yam,
   rice,
   Sorghum
   millet

Geographic Variation: Root and tuber crops in the south, grain crops in the north
Agro - Ecological Zones/Rainfall Regime;

Unimodal - North

Bio modal - South
Crop Phenology

Growth stage
2 leaf to flat leaf

- Vegetative Stage
- 8-10 weeks

Tasseling (2 weeks)
Silking (2 weeks)
Curbing (4 weeks)
Black layer

Reproductive Stage
Physiological Maturity
Harvest
120 days depends on variety
Crop Phenology

- **Germination**
  - Tilling
  - Panicle initiate
  - Vegetative stage
    - 40-100 days
    - Depends on variety

- **Panicle formed**
  - Pollination
  - Flowering
  - Reproductive stage
    - 35 days

- **Grains form**
  - Milking (accumulation of starch)
  - Mature grains
  - Ripening
  - Maturity
  - Harvest
  - 30 days
## Growing Season – Maize – Northern Ghana

<table>
<thead>
<tr>
<th>STAGE / ACTIVITY</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th>No. OF DAYS</th>
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<td>Establishment</td>
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<td>15-20</td>
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<td>Vegetative</td>
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<td>25-40</td>
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<td>Flowering / tasseling</td>
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<td>15-20</td>
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<td>Yield formation / cobbing</td>
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<td>35-45</td>
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<td>Ripening / drying</td>
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<td>10-15</td>
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</tbody>
</table>
Satellite data

Crop type classification

Climate – rainfall, temperature etc

Yield measurement

Biophysical data

Space Applications

- Temporal
- Spatial

- LAI
- Chlorophyll
Monitoring platform

• Crop monitoring System:
  - Crop health monitoring
  - Crop yield assessment

• Good and timely capture of crop condition at a large scale for planning and decision making

• Prototype – interactive app
• Develop and expand our services
<table>
<thead>
<tr>
<th>Challenges</th>
<th>Issues</th>
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<tbody>
<tr>
<td><strong>Big yield gap</strong></td>
<td>Low soil fertility</td>
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<td>Low soil water retention capability</td>
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<td>Little use of fertilizer (Below ECOWAS/AU average)</td>
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<td><strong>Access to high resolution satellite data</strong></td>
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<td><strong>Grounding data for validation</strong></td>
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<td><strong>Huge variability in smallholder farming</strong></td>
<td>Rainfed agriculture, Family-managed farms, Low investment / Limited access to inputs, Not mechanizes</td>
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<td><strong>Climate Change</strong></td>
<td>Variable growing seasons. Unpredictable weather patterns</td>
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Expectations

- Build capacity in using crop watch
- Downscale and customize Cropwatch to Ghana
- Next steps in implementing Cropwatch in Ghana
- Build a robust crop monitoring system for Ghana
Thank you

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