Keeping an eye on our Crops

Steven Krekels - Manager VITO Remote Sensing
So who is VITO Remote Sensing?
We believe in the power of technology, economic dynamics and the creativity of people to leverage things.

ACCELERATING the transition to a SUSTAINABLE world

Sustainable Energy Supply, (Re)use Of Raw Materials, Food Security, Circular Economy, Quality Of Life

We believe in the power of technology, economic dynamics and the creativity of people to leverage things.
Technology to make a transition to a more sustainable world

Energy

Materials

Chemistry

Health

Land use
So what about EO and commercial markets?
Market Intelligence: What grows where & how much?

Few fields with known crop type

Training a satellite-based automatic crop detection procedure

Region-wide area estimation, months before harvesting

Crop classification in the Champagne region

Winter wheat
Winter barley

remotesensing.vito.be
Market Intelligence: What grows where & how much?
Seed Breeders: Drone based phenotyping

https://remotesensing.vito.be/case/mapeo
Belgian potatoes are monitored from space!

- Crop development
- Field heterogeneity
- Risk assessment at production and quality losses
- Yield forecasts
- Digitization of agriculture for all actors in the potato value chain: farmers, traders, food processing industry, agroconsultants...

Potatoes: Need to tackle the complete value chain

<table>
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<th>Interests</th>
<th>Input Suppliers</th>
<th>Credit &amp; Finance</th>
<th>Farmers</th>
<th>Traders</th>
<th>Food Processors</th>
<th>Retailers</th>
<th>Consumers</th>
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<tr>
<td>Problems</td>
<td>Purchasing capacity farmers</td>
<td>Agri = Risks</td>
<td>Climate Change Information gap Soil Nutrients</td>
<td>Unstable quality &amp; yields</td>
<td>Sustainable sourcing</td>
<td>Critical consumers</td>
<td>Food Quality</td>
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<td>Solutions</td>
<td>Supply Planner Crop Disease Alert</td>
<td>Risk-monitoring Credit Scoring</td>
<td>Grower Apps What-When-How Crop Disease Alert</td>
<td>Yield Prediction Planning &amp; Optimization</td>
<td>Certification</td>
<td>Traceability</td>
<td>Tracer App</td>
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<tr>
<td>Impact</td>
<td>Higher quality input</td>
<td>Increase loan portfolio</td>
<td>Higher yield &amp; income – higher efficiency of resources</td>
<td>Sustainable sourcing &amp; supply</td>
<td>Sustainable supply of quality products</td>
<td>Reducing risk factors</td>
<td>Increased Trust</td>
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Applications adding value to all actors in the value chain
Potatoes: Data collection tool
Potatoes: Yield forecast

- Based on combination of yield models
- For 3 varieties: Fontane, Bintje, Nicola
- Per field, municipality, province, region
- From July onwards
- Exposed to farmers only
Challenges in Satellite based monitoring systems?
Clouds...
The breakthrough solution: Cropsar

• VITO developed a unique algorithm that combines Optical & Radar data.
• → measurements for cloudy days possible!

• Every 5 days a measurement point (e.g. NDVI)
Cropsar – Growth curve

Unique algorithm combining Optical & Radar data
Keep an eye on our blog for more!
https://blog.vito.be/remotesensing