Greenhouse Early Warning

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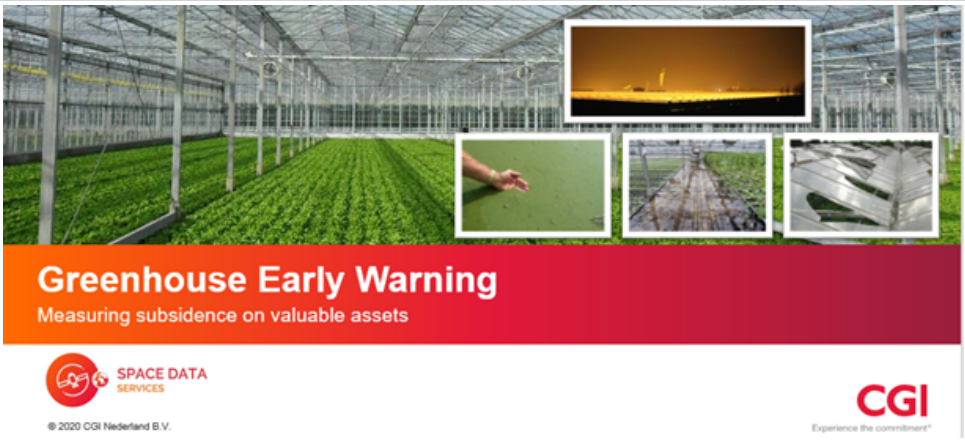

Greenhouse Early Warning (Source: CGI)

Category

☐ Product Development	☑ Product Sales	☑ Underwriting	☐ Loss Adjustment	☑ Claims Handling

PRODUCT DESCRIPTION

The Greenhouse Early Warning Service (GEWS) has been developed by CGI Netherlands in close collaboration with PinC Agro, an Achmea Company and an (innovative) risk management consulting firm in the agricultural sector. This GEWS provides the Greenhouse Owners information based on the subscribed services.

At the moment the GEWS provides the following services:

- **Subsidence measurement** of Greenhouses: Greenhouses in the Netherlands have the challenge of maintaining their structural integrity in relation to the soft earth the greenhouses are built upon. The subsidence leads to broken windows in the greenhouse, again causing heat-leaks leading to crop-growth-disturbance: loss of yield. As well, water-management inside a greenhouse is a critical process that is greatly hindered by uneven floors, causing irrigation problems for the crops.

- **Heat detection**: By mapping the heat distribution of the greenhouse, identifying hot- and cold-spots, energy leaks or energy-screen issues.
- **Damage detection**: Damage detection of greenhouses is important both to the greenhouse owner, risk prevention companies and insurance companies. The damage detection can give an estimate of the total damaged area, useful to calculate financial damage, and allocate resources. For all the stakeholders, early damage detection means an as fast as possible recovery and know the full extent of the damage to the greenhouse.
- **Algae detection** in water basins: All Greenhouses are by law required to have and maintain a water basin to irrigate the greenhouse. These basins are usually in open air, and algae can easily disperse in areas. Early detection of the algae can allow for timely measurements, that will allow crops to be watered to the optimum.

User Requirement/Need:
Grip in continuity is considered highly important for greenhouse owners. Their asset is extremely vulnerable towards weather, flooding, plant diseases. Any information that enables greenhouse owners to prepare for and react on any elements with negative impact to their crops and therefore their yield is positively welcomed.

PRODUCT SPECIFICATIONS

Main processing steps

These products are delivered as a service to the end customers. The customers subscribe to this service and the receive the products on a regular basis for their greenhouse.

Input data sources

Optical: Landsat 8 and 9 thermal bands, Sentinel 2 multiple bands

Radar: Radarsat-2 Ultra Fine Mode, Sentinel -1 Interferometric Wide Swath SLC

Supporting data: data sets from growers

Spatial resolution and coverage

Spatial resolution: multiple (from 3m x 3m to 100m x 30m)

Coverage: This service has global coverage. Products are delivered per greenhouse.

Availability: As requested by our customers the products are delivered on a monthly basis

Accuracy / constraints

Thematic accuracy: products are validated with in-situ data

Spatial accuracy: products are delivered per greenhouse

Limitations

Products are available on a monthly basis via subscription

Frequency / timeliness

Frequency: monthly

Timeliness: day

Delivery / output format

Data type: API based customized interface to end-users

File format: API based customized interface to end-users

Accessibility

Products are available on a monthly basis via subscription

CHALLENGES ADDRESSED - USE CASE(S)

Product Sales:

- Pre-contractual consulting (show-case risk exposure)
- Farm structure / management practice (linking to cadastre)

Underwriting:

- Online platforms or easy-to-use interfaces integrating various data sources (e.g. vegetation stress, field boundary changes, comparison, etc.)
- Risk / crop zoning
- Identification of farmer's production practice (technology, infrastructure, property, machinery, etc.)

Claims Handling:

- Identification of actual damage size (tons (volume) / ha (area) / price (yield value))
- Quality control assessment of claims before pay-out
- Fraud detection