watch iT grow

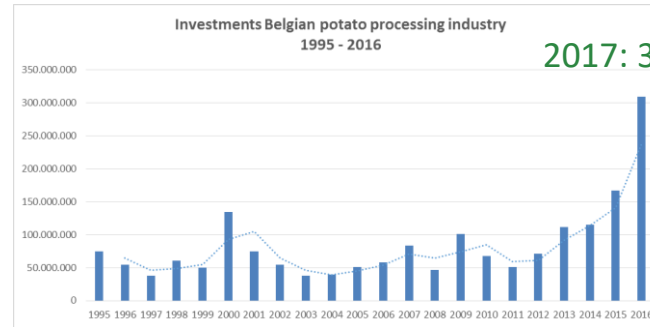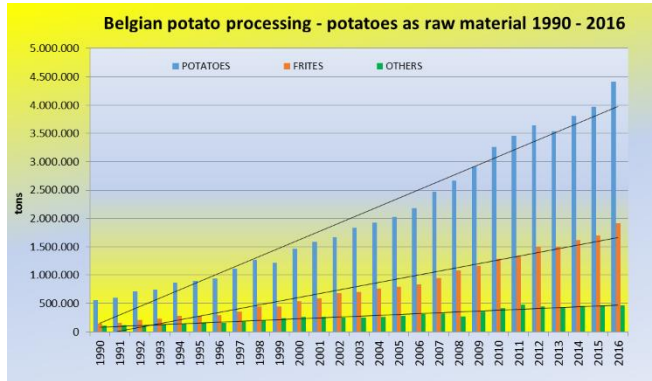# monitoring potatoes from space…

Isabelle Piccard, VITO

Luxembourg Earth Observation &
Integrated Applications Day,
Mondorf-les-Bains (LU),
19 April 2018

With contributions from: Jean-Pierre Goffart, Yannick Curnel, Viviane Planchon, Joost Wellens, Bernard Tychon, Anne Gobin, Jürgen Decloedt, Romain Cools, Nele Cattoor
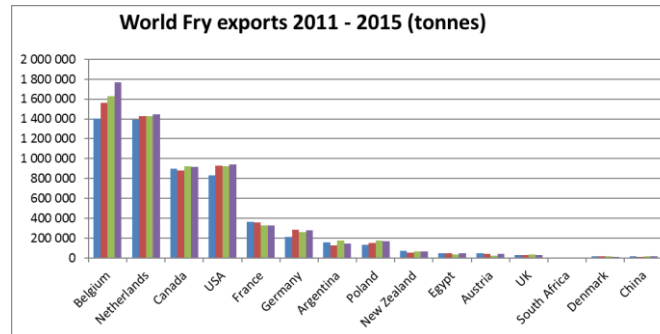
Background

- Potatoes remain a major staple food product in most of the EU countries
- Global demand for fresh potatoes and processed potato products is increasing

Belgian potato processing - potatoes as raw material 1990 - 2016

2017: 4,57 million tons of potatoes processed!

Investments Belgian potato processing industry 1995 - 2016

2017: 305 M€ invested

World Fry exports 2011 - 2015 (tonnes)

2017: 2,2 million tons of fries exports

www.watchitgrow.be

Need for more potatoes!

- Need for more arable land and efficient land use
- Potato yields have capacity to increase!

Need for new instruments!
"to measure is to know"
"if you can measure it, you can improve it"

- Nature product = risks! Soil, weather, disease & pests,… → Early Warning!
- Evolution towards precision agriculture

www.watchitgrow.be

- **2014-2017: iPot project**
- Financed by BELSPO, Stereo-III programme
- Partners: Belgapom, CRA-W, VITO, ULg

  → R&D: set-up of a potato monitoring system

- **2017-… WatchITgrow® service**
- Launched in March 2017
- A tool for all actors in the potato chain: farmers, advisors, traders, processing companies, researchers,…

Free after registration on www.watchitgrow.be
2017 season: > 300 users, > 1300 parcels, > 7500 ha potatoes monitored

www.watchitgrow.be

WatchITgrow® for the future of the Belgian potato chain
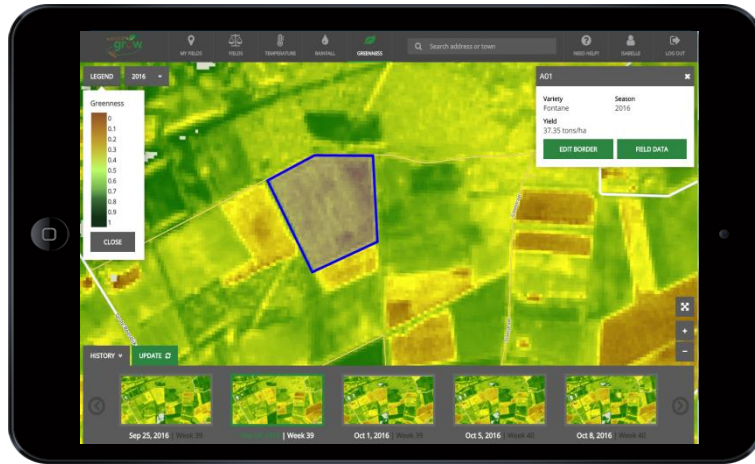
Monitoring potatoes from space!

- Crop development
- Field heterogeneity
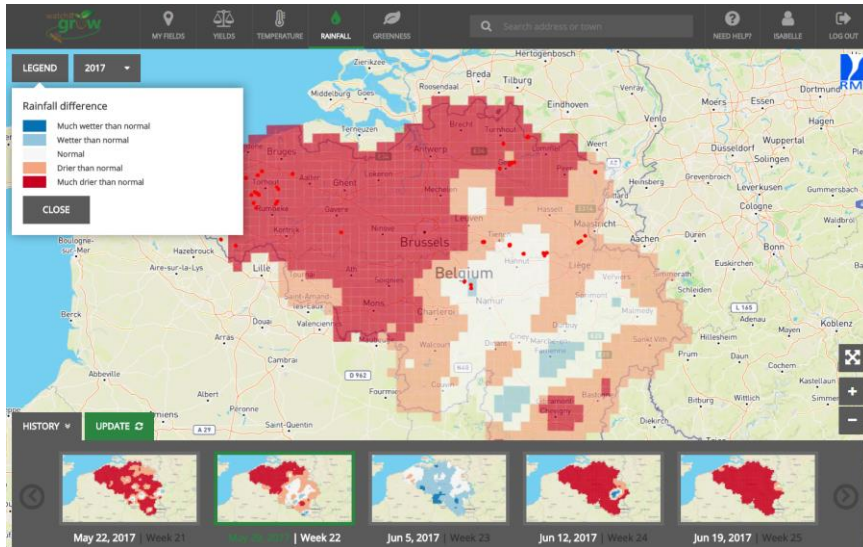- Risk at production and quality losses
- Yield forecasts

For all actors in the potato chain:

- Get access to satellite images, weather data, yield forecasts
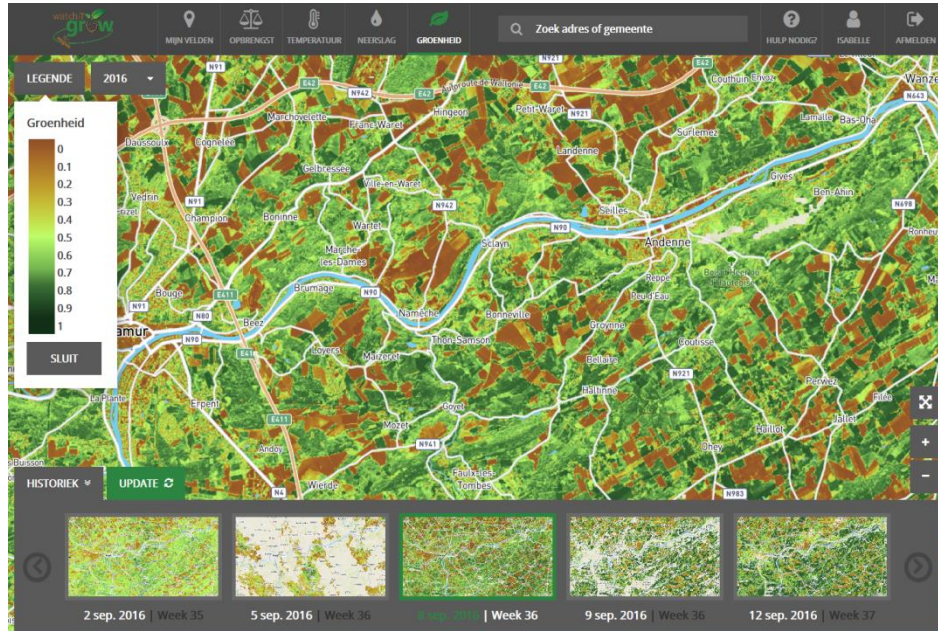- Store your own field data (e.g. treatments, yield samples,…)

watch iT grow
www.watchitgrow.be

TEMPERATURE **RAINFALL**
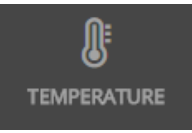
- Country wide weather info on a weekly basis:
  - Average temperature
  - Precipitation sum

"deviation with average"
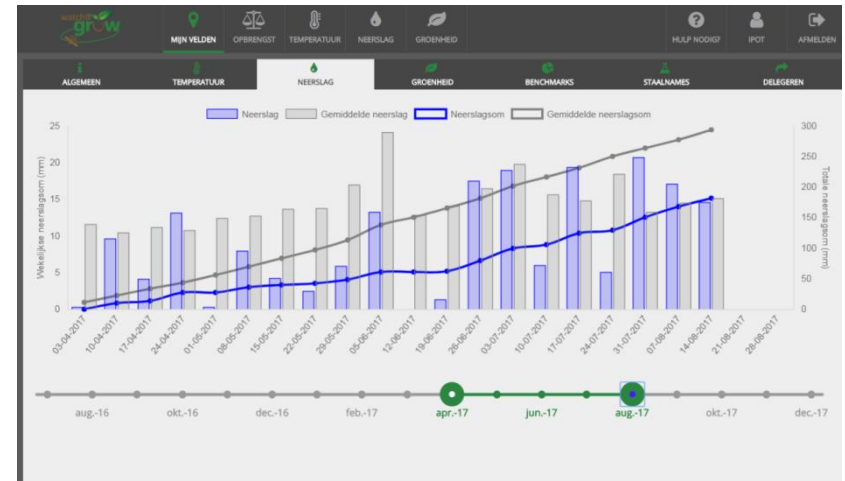
→ risk at production or quality losses?

GREENNESS

2 sep. 2016 | Week 35   5 sep. 2016 | Week 36   8 sep. 2016 | Week 36   9 sep. 2016 | Week 36   12 sep. 2016 | Week 37

- **Via satellite: Sentinel-2A+B**
  - 1 image every 5 days
  - 10m detail

- **Greenness index**

→ **monitor & compare fields**
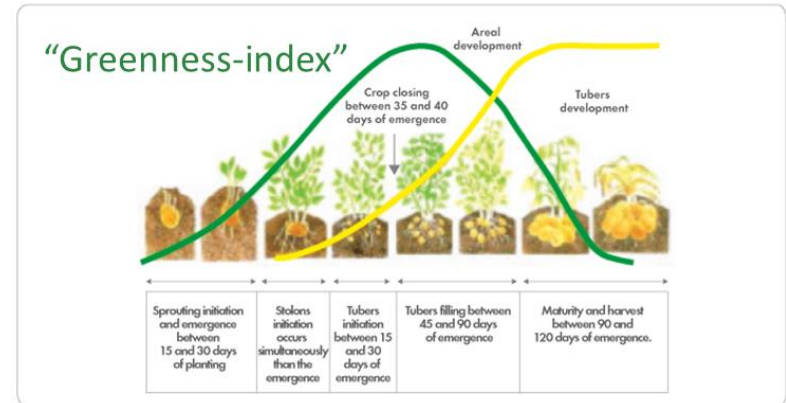
Crop growth

Emergence →

Senescence →

| 6 May 2017 | 26 May 2017 | 2 June 2017 | 22 June 2017 | 7 July 2017 | 17 July 2017 | 25 July 2017 | 30 July 2017 | 6 Aug 2017 | 14 Aug 2017 |

Greenness
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
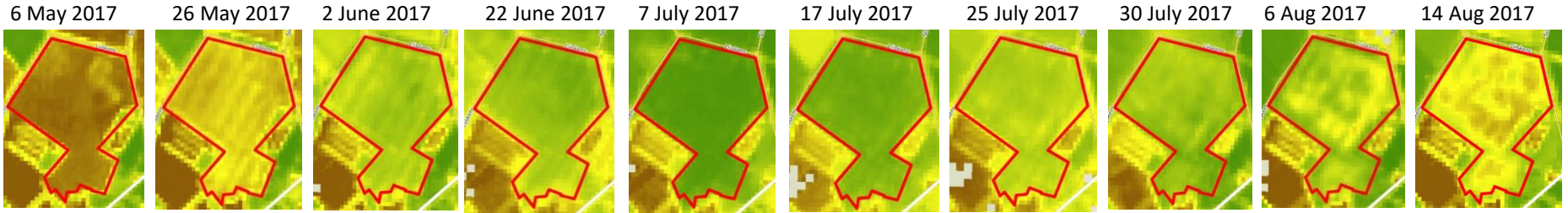
- **Normal crop growth & development?**

- **Heterogeneity?**

    → improved sampling (per zone)

    → evolution towards "smart farming": variable rate application of fertilizers, irrigation, haulm killing,…

    → useful for field selection (historical data)

- **Comparison of fields:**

    → optimize field visits

    → input for planning / logistics (harvest)

watchiT grow

www.watchitgrow.be
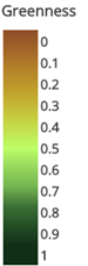
Yield forecast

- **Based on combination of yield models**

- **For 3 varieties: Fontane, Bintje, Nicola**

www.watchitgrow.be

MY FIELDS

Field specific monitoring?

- For farmers
- Data can be shared with other actors in the potato chain **DELEGATE**

Enter your fields…   **+ ADD FIELDS**

- **SELECT** ▶ from existing parcel layer
  (IACS crop type declarations)

- **DRAW** ✎ your parcel on the map

- **IMPORT** ⬆ a shapefile with your parcel boundaries
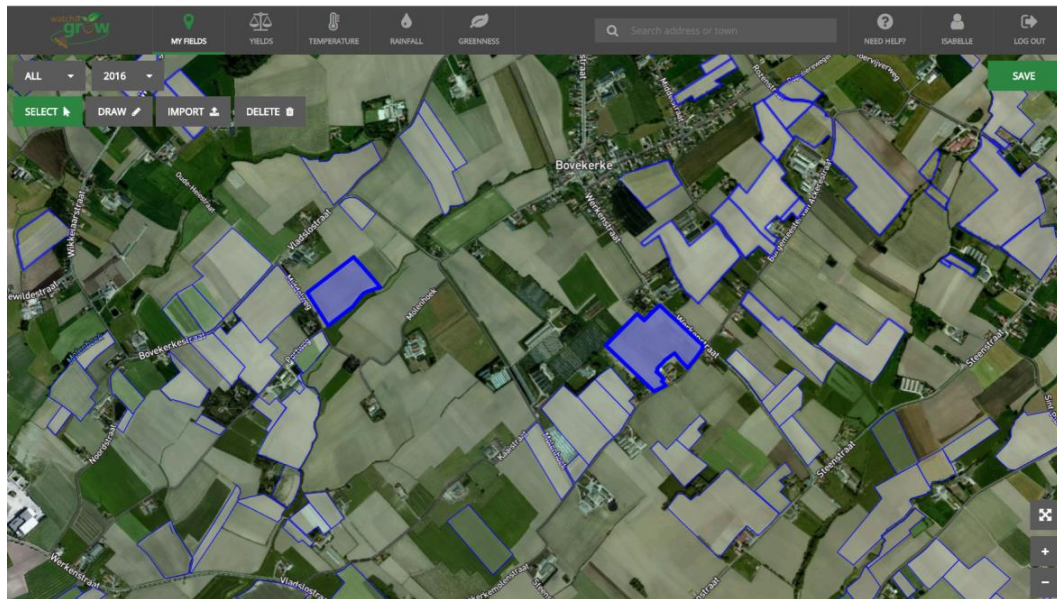
www.watchitgrow.be

… and start monitoring your fields!

All data in one place

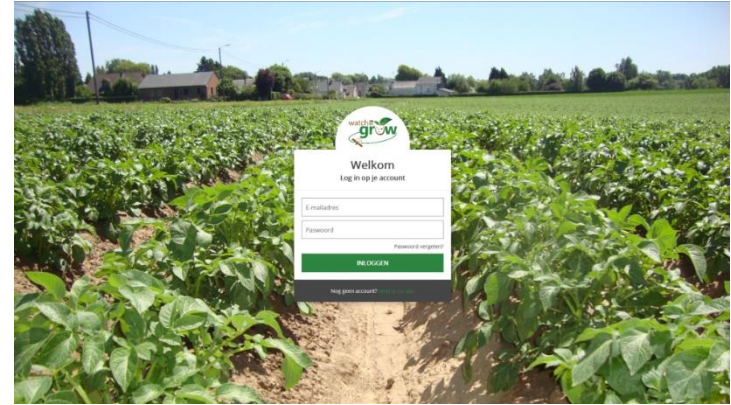- View watchITgrow® data and add your own data!

Summary & outlook

Try watchITgrow® for free during the 2018 season!

Plans for the (near) future:

- July 2018: extend monitoring to other crops (sugar beets, maize, wheat, vegetables,…)
- Further link watchITgrow® with other web tools (Vegaplan, commercial field registration tools,…)
- Move towards "precision agriculture": add N-fertilization and irrigation advice,… in collaboration with partners from the potato sector

→ "WatchITgrow as collaboration platform": benefit from combination of field, weather, soil, satellite data to increase yields.

www.watchitgrow.be

Thanks!