



## INTELLI-FRUIT - Intelligent Fruit Cultivation

**Programme**  
STEREO III

**Contract**  
SR/00/370

**Start - End**  
1 January 2018 - 31 March 2022

**Project type**  
Shared cost

<https://eo.belspo.be/INTELLI-FRUIT>

<https://eo.belspo.be/INTELLI-FRUIT-webstory>

### Context and objectives

In recent years, different applications of precision agriculture have been developed and implemented for specific crops such as potato. However, in horticulture and for fruit tree crops in particular, precision agriculture is lagging behind. This is mainly due to the three-dimensional nature of tree crops. Furthermore, it is unclear to which extent precision fruticulture can increase the rentability of the fruit growing company and until now, the complex data sets returned by (remote) sensing techniques cannot easily be interpreted by the fruit grower. Therefore, this project aims to bring precision fruticulture closer to practise by evaluating its applicability and added value for the fruit grower. Different precision techniques will be tested and improved in practise and the results will be demonstrated and disseminated to the end-user via various communication channels. Finally, a dashboard will be developed which can be used by the fruit grower to visualize data from the field, allowing him to apply precision fruticulture.

### Project outcome

#### Scientific results

- Three algorithms to transform raw remote sensing data into interpretable information:
  - \* NDRE as indicator of drought stress
  - \* Flower intensity mapping
  - \* Yield prediction
- One peer reviewed article in a scientific journal
- Seven presentations and five proceedings at five different scientific symposia
- Communication to the fruit growing sector: 4 demonstration events, 9 workshops and 23 publications in professional journals

#### Societal (including environmental) relevance

By applying precision fruticulture, various resources such as water, fertilizers, chemicals, fuel and energy can be used more efficiently. For variable irrigation, thinning and fertilization, resource efficiency was calculated as fruit yield in kg of pears (for orchards) or the number of trees in quality



class A (for tree nurseries) divided by the consumption of the corresponding resource. The result was then compared for variable versus uniform rate management. For instance, with variable rate irrigation in Rummen 2020, the water, energy and fuel efficiency was almost 2 times higher than with uniform rate irrigation. With variable rate chemical thinning in Wimmertingen 2021 resource efficiency was 3.4 times higher than with uniform rate thinning.

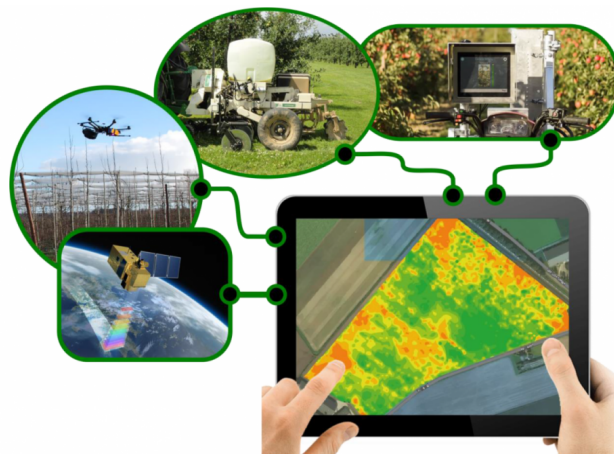
## Products and services

The most important result of the project is the dashboard from WP6. The dashboard makes it possible to display, compare and interpret relevant data for precision fruticulture in one application. The fruit grower no longer has to search for data from his orchards on different platforms. Moreover, the dashboard does not only contain data sources that require a certain investment (soil scans and drone flights), but also data that can be consulted free of charge, i.e. soil maps and satellite images. In this way, the grower gets a first idea of the variation that is present in his fields in a few clicks.

Second, an advisory system is currently being set up by which growers can request drone flights via the EVA®-app of pcfruit. This system brings all the stakeholders together: fruit growers, drone pilots, advisors and data-analysts and brings precision fruticulture to practice.

## Potential users

- Fruit growers, Fruit tree nurseries, Advisors in fruticulture / agriculture
- Drone pilots, Providers of precision agriculture applications



### Project leader(s)

*DELALIEUX Stephanie* | VITO - Remote Sensing - Teledetectie en aardobservatieprocessen  
stephanie.delalieux@vito.be

### Belgian partner(s)

*VANDERMAESEN Joke* | pcfruit  
joke.vandermaesen@pcfruit.be

### Location

Belgium : Halen, Rummen, Wimmertingen, Geldenaken

### Website

<http://www.pcfruit.be/intelligenter-fruit-telen>



### Belgian Science Policy Office (BELSPO)

WTC III - Boulevard Simon Bolivar 30 b. 7 Simon Bolivarlaan • B-1000 Brussels  
Tel. +32 (0)2 238 34 11 • [www.eo.belspo.be](http://www.eo.belspo.be) • Email: [stereo@belspo.be](mailto:stereo@belspo.be)