

# A viable sustainable solution to optimize yield

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# The BayWa Group

## At a glance



### Our company

- Founded in Munich in **1923**
- Leading **trading** and **services group**
- Corporate culture based on **cooperative roots**
- Core segments of **energy, agriculture and building materials**
- Approximately **19,200 employees**
- Over **3,000 locations** in more **44 countries**
- Worldwide **342 affiliated companies**
- Stock listed company



# Simple Fact: Fields Are Not Homogeneous



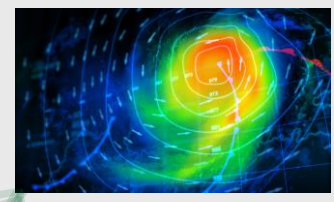
*Photo: TF*

Preparation Phase

Satellite image evaluation

- Soil sample + crop history
- Crop(consulting)
- Crop selection & -purchasing
- Seedbed preparation

Typical complete process



Weather

- Seeding manual, constant rate or variable rate (based on satellite maps) possibly with first fertilizer dose

Preparation



FMIS

Growth Phase

- Spreading fertilizer with:
  - Constant rate implement
  - Intelligent implement (variable rate)
  - Plane
- pest control with:
  - Robot
  - Constant rate implement
  - Intelligent implement (variable rate)
  - AI implement (selective control)
  - Plane or drone

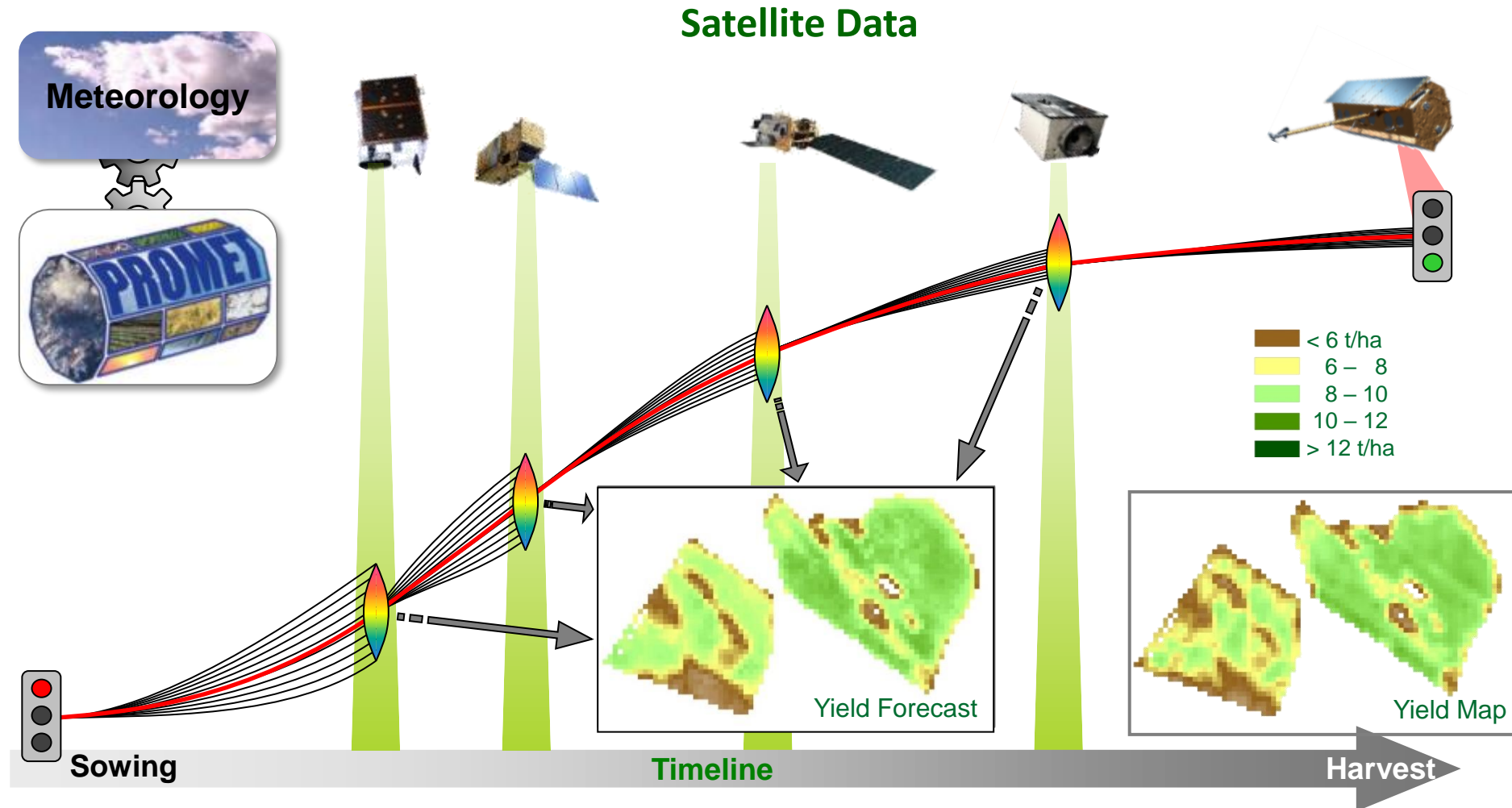
Documentation



Legal requirements

- 2nd and/or 3rd fertilizer spreading
- 2nd and/or 3rd pest control

# Decision Support Based on Digital Field Twin





# Use Case 1: Irrigation advice for sustainable water management

## Reservoir volume

25<sup>th</sup> May 2018 = 3.6 Mio m<sup>3</sup>

25<sup>th</sup> May 2017 = 5.3 Mio m<sup>3</sup>

30<sup>th</sup> May 2016 = 5.5 Mio m<sup>3</sup>

## Challenge:

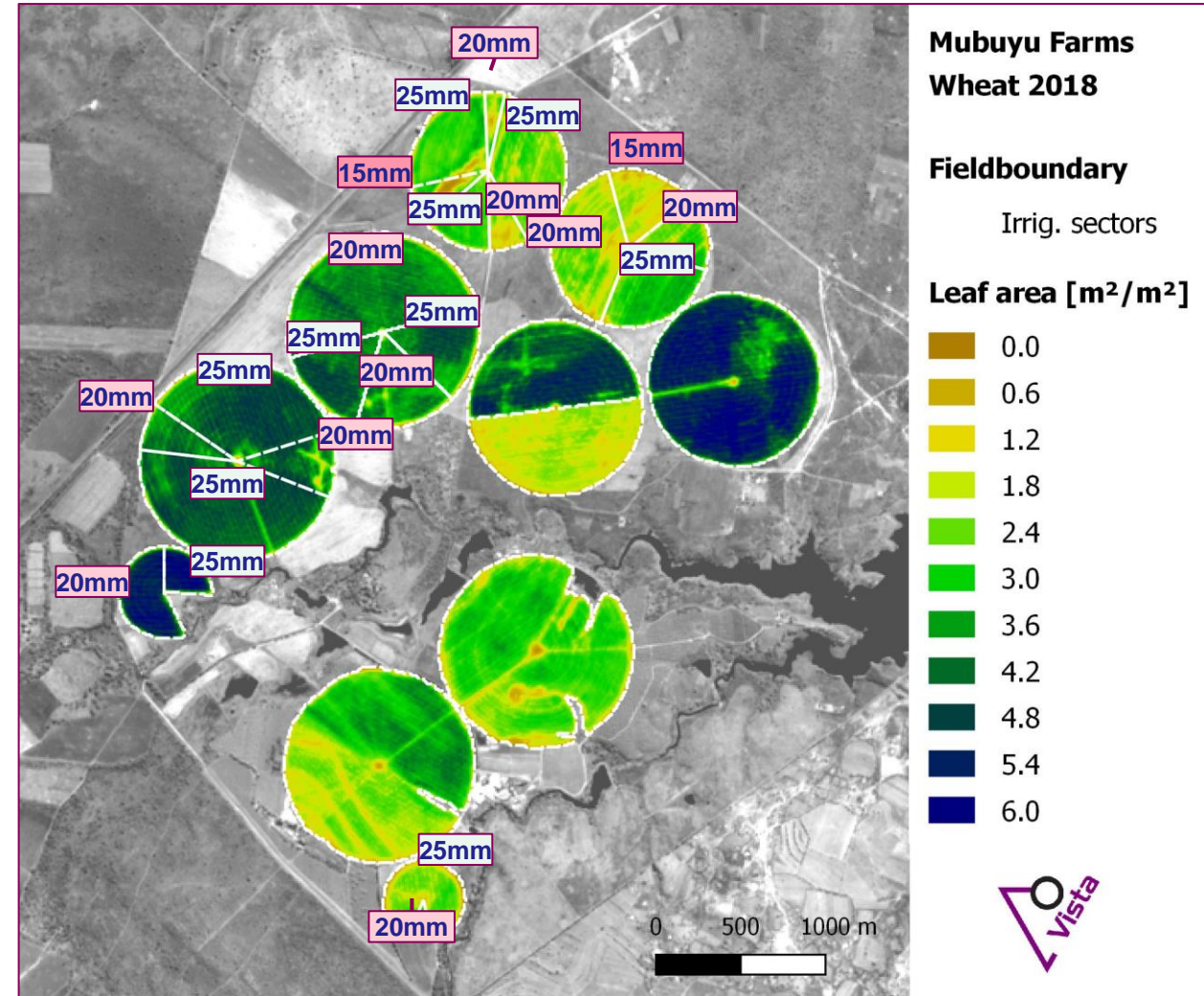
satisfying crop water demand during the whole wheat season with lower water level in the main dam in 2018

## Solution:

Simulation of **crop water demand** based on the actual development of biomass used for weekly site specific or sectoral irrigation advice

## Results:

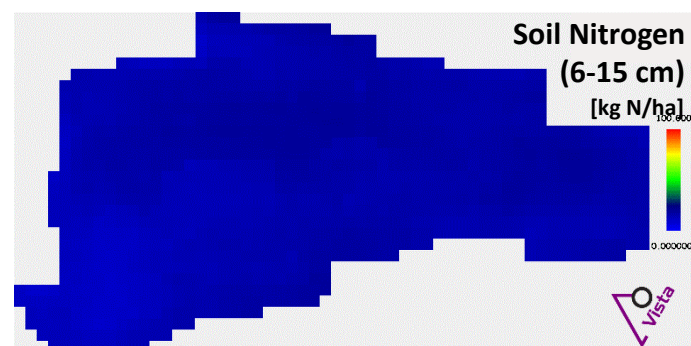
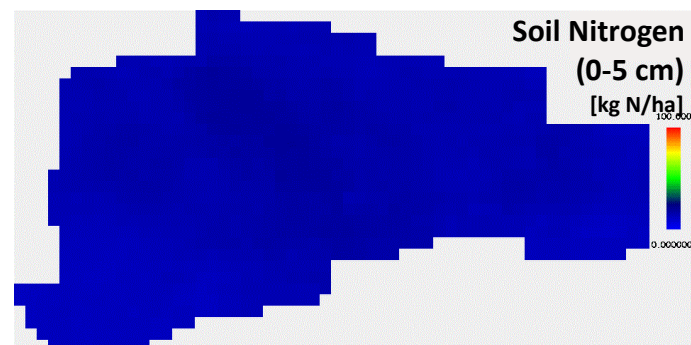
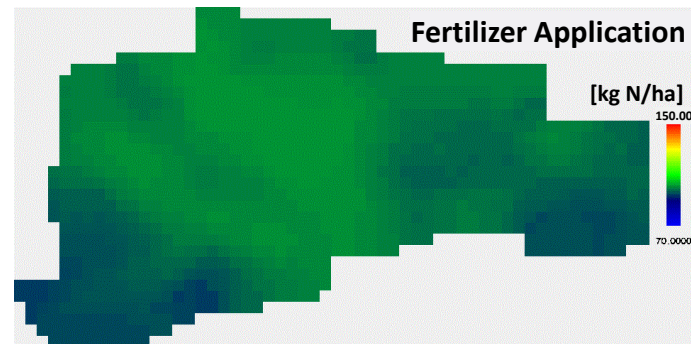
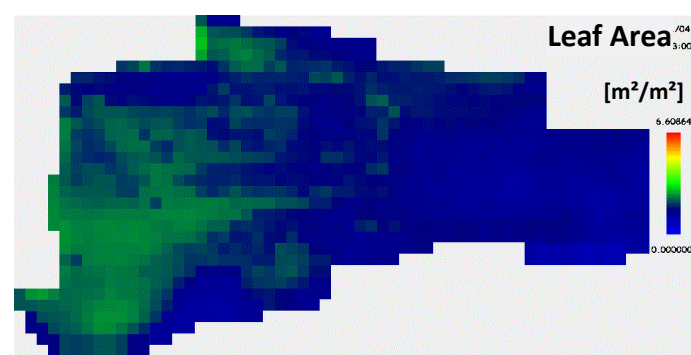
- Reduced water use (-30%) still resulting in sufficient irrigation water for all pivots despite lower water availability
- Even increased yield (+25%) in comparison with 2017 e.g. from 7.3 to 9.1 t/ha measured for two pivots



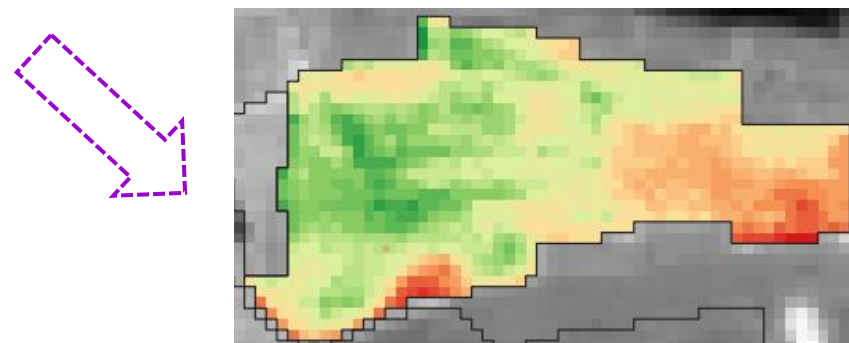
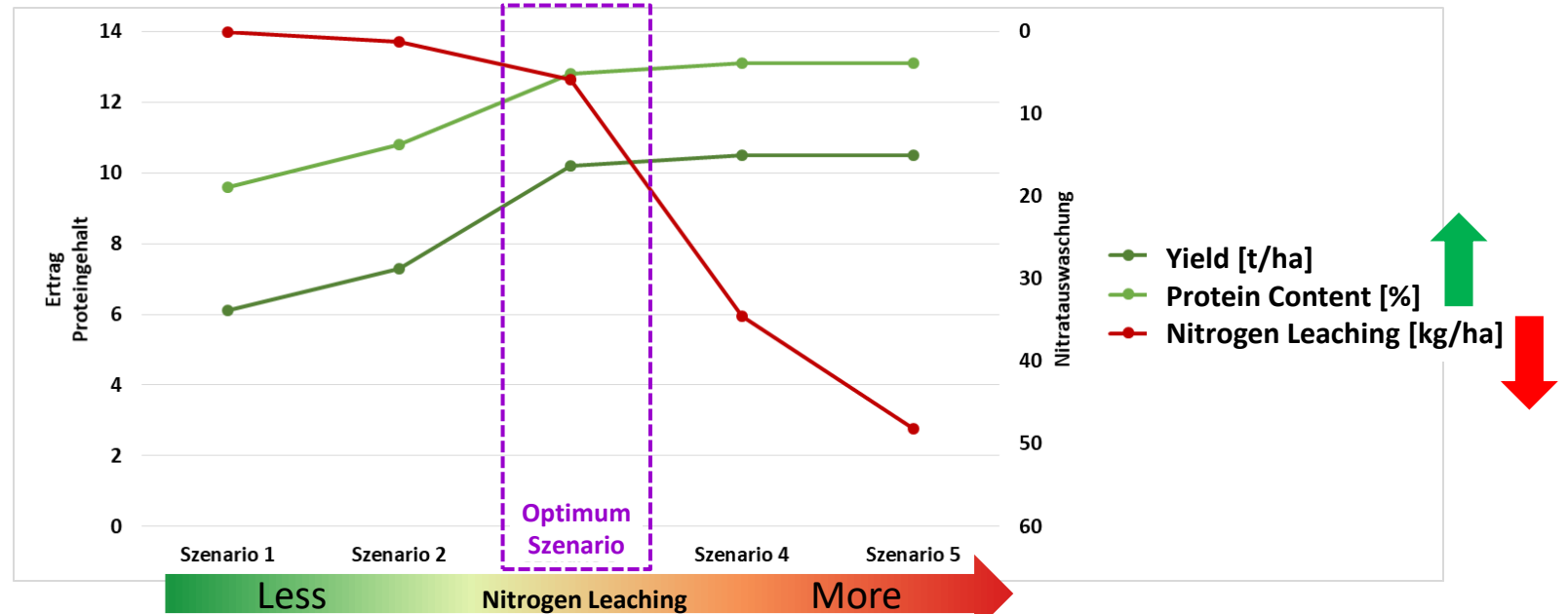


# Use case 2: N Service

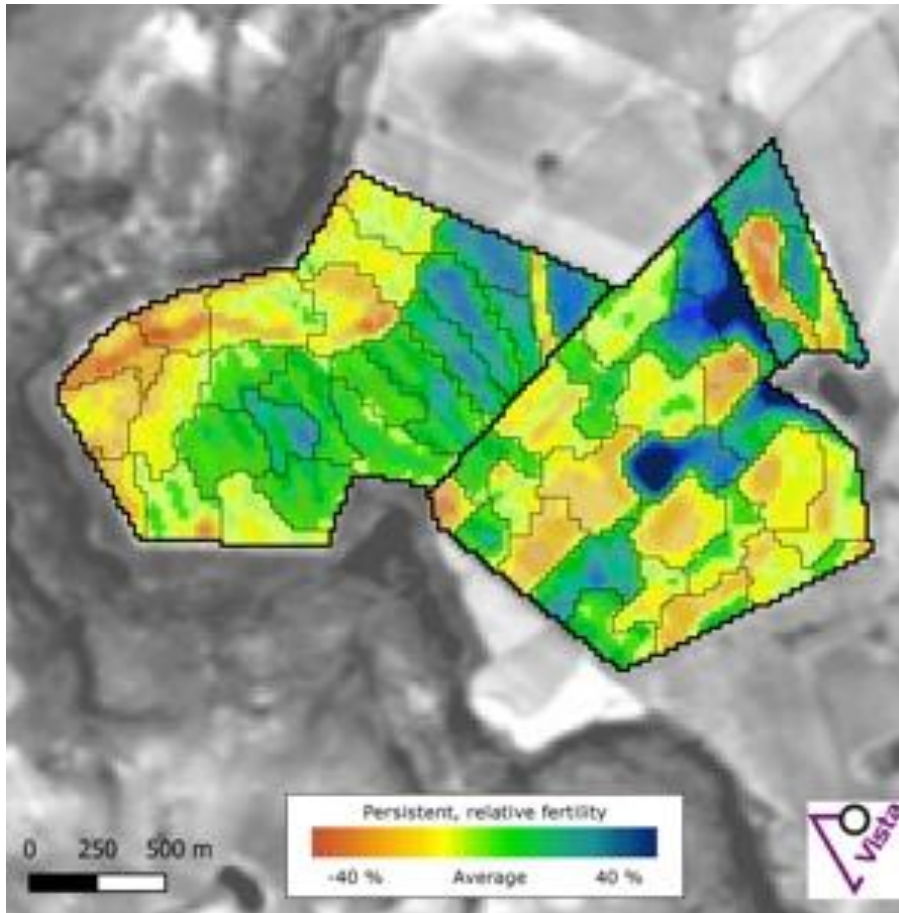
The site-specific simulation of fertilization scenarios allows for each pixel (10 x 10 m) to optimize the nitrogen application



2021/04  
10/23:00



# Use Case 3: Biodiversity





**Thank you for your attention!**

**BayWa**

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