

Growing
flowerbulbs in
the fast lane of
sustainability



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The Green Tulip

On the way to 0 impact in the environment

How do we meet regulatory, social, economic and ecologic demands?

Michel Jansen – Program manager Green Tulip

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EXPLORE & EXPLAIN



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— Semper Augusto Aquarelle from XVII

Tulip mania took place during the 1620 to 1637 and is considered a extraordinary period in the history of the Netherlands. During this time the prices of the tulip increase up to the equivalent

of \$US2 million per bulb before the bubble burst in February 1637.

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Source: Verify, Rene Faas, Keukenhof, Bollenacademie

Green Tulip



- Public Private Partnership (TKI-PPS) <https://business.gov.nl/subsidy/public-private-partnership-allowance-scheme-research-and-development/>
- 50% private investment + 50% public investment (Topsector NL/TKI)
- Research and development project, coordinated by Vertify
- Conditions:
 - Ambitious
 - Distinctive
 - Sustainable
 - Partnerships
- Organization with a steering committee, guidance team (with growers) and an expert team (with scientists and researchers)
- Principle: Integrated Crop Management
- Horizon: how will we grow tulips in 2035?

Ambition: Next level of the system approach (ICM)



Green Tulip – work packages



1. Soil resilience and regenerative practises – Verify, WUR & LUAB
2. Vitality and quality of tulip range – Verify
3. Data driven disease recognition – Verify & InHolland
4. Precision application green products – Verify & WUR
5. Presentation and demonstration – Verify



WP1: Soil regeneration techniques for bulbs



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Minimize Soil disturbance RegenAg practices for Tulip bulb production
no-tillage tulip bulb planting
no-tillage subsoiling
no-tillage (organic) fertilizer injection
no-tillage cover crop seeding
cover crop seeding in soil flow by harvester at tulip harvest

Cover the soil RegenAg practices for Tulip bulb production
maintain crop residues
grow cover crops
spreading straw on tulip beds
grow companion plants



Plant diversity and living roots year-round RegenAg practices for Tulip bulb production
adapted crop rotation
grow cover crops such as:
>> yearly single specie cover crop
>> yearly multi-species cover crops
>> permanent cover crop
>> relay cover crop between tulip crop and following spring crop
grow companion plants

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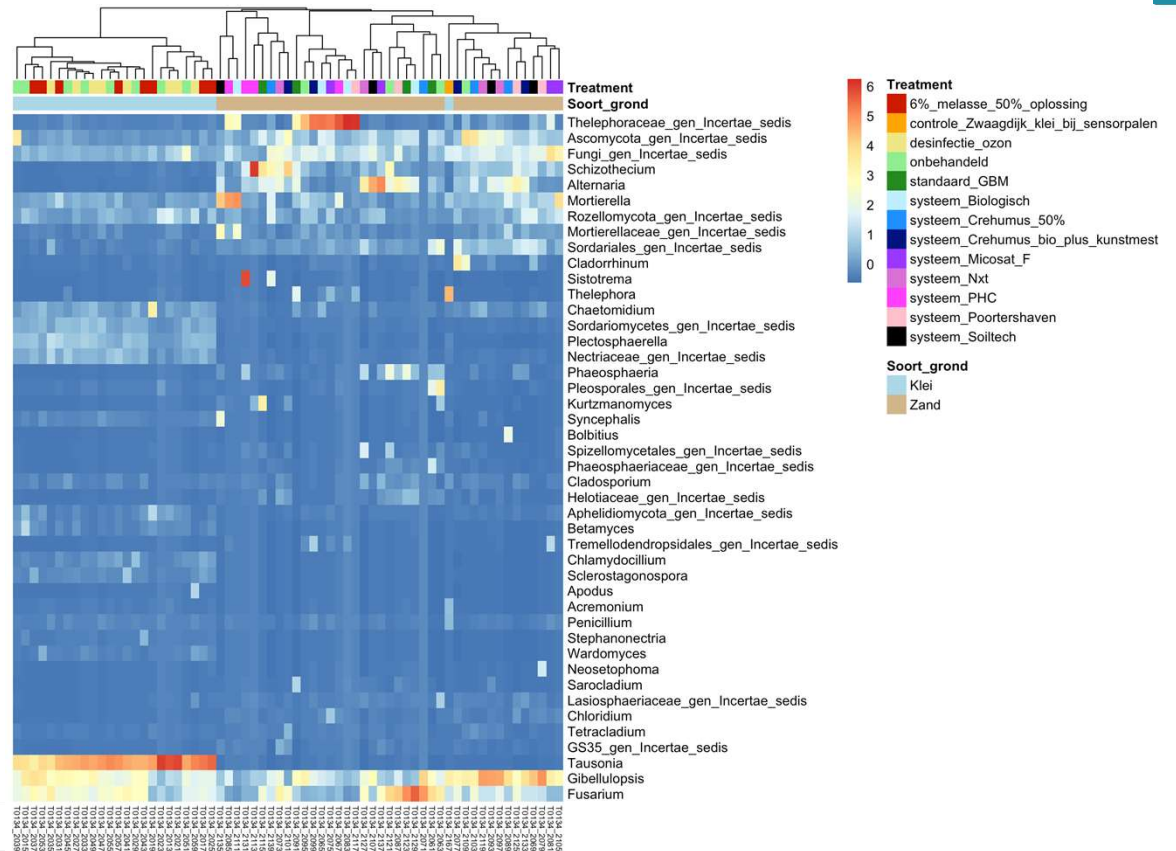
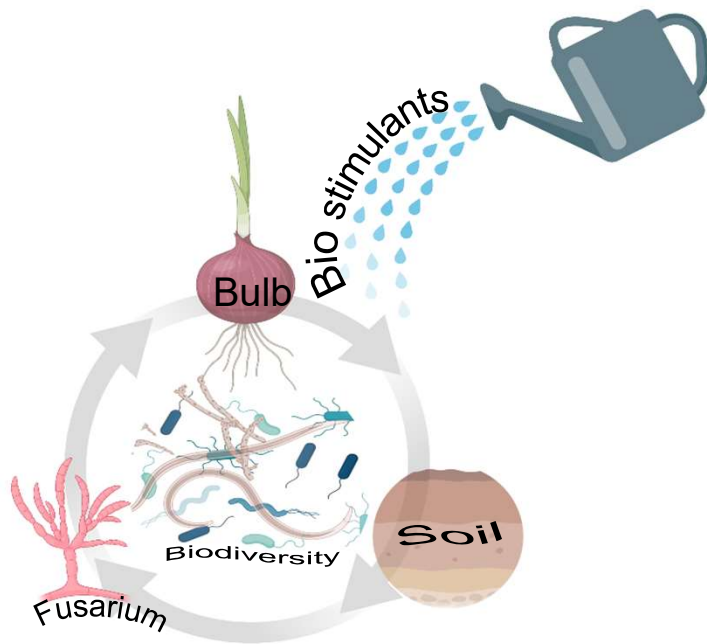
Biological solutions for disease suppression



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LCAB

hogeschool
Leiden



Development of soil index on basis of DNA profiling



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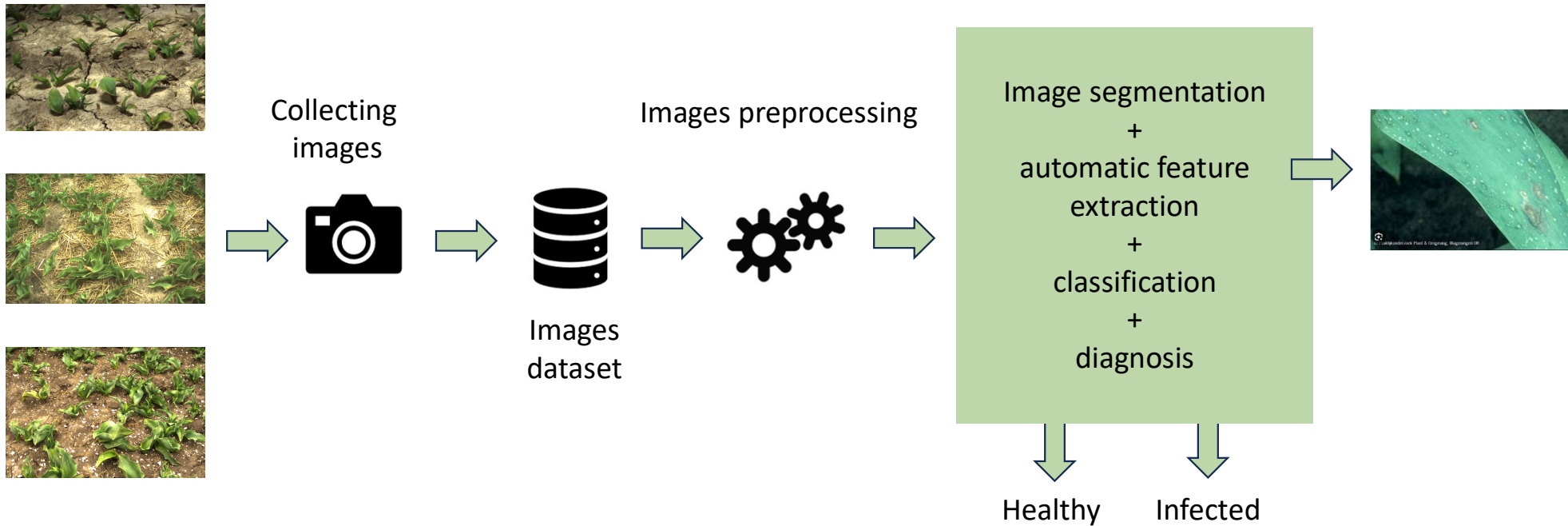
WP2:
Vital tulips

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WP3: Data driven disease recognition

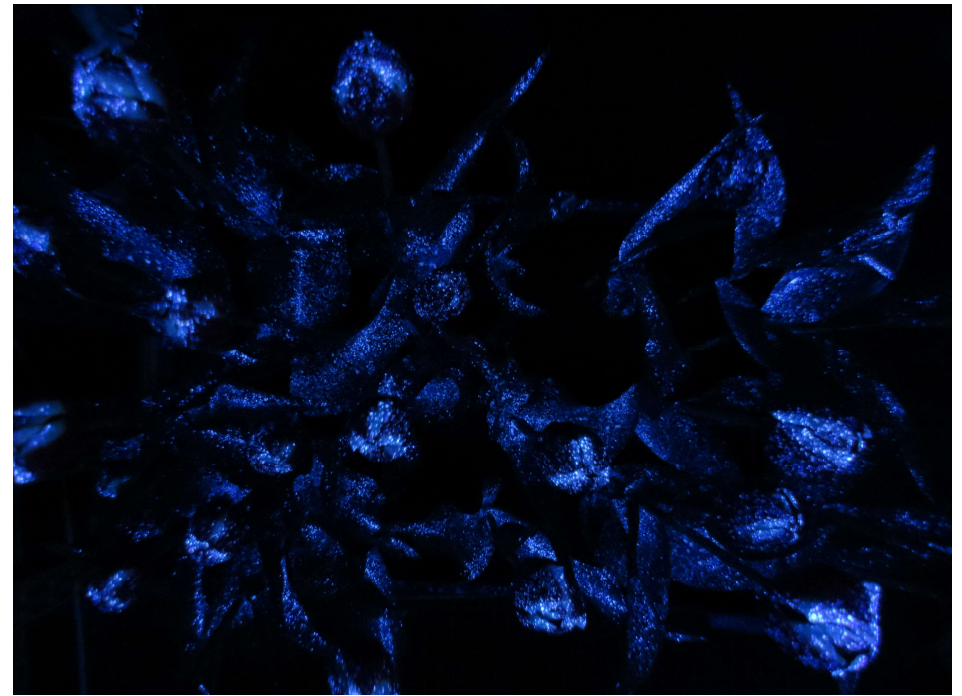


WP3: DEEP LEARNING



Source: Based on <https://www.mdpi.com/2077-0472/12/1/9>

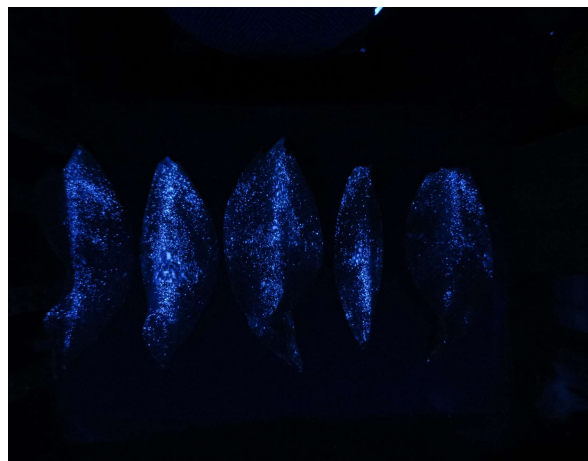
WP4: Precision application



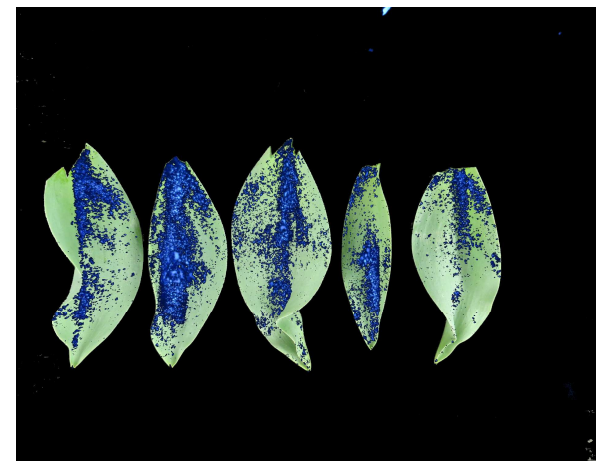
Analysis of applications



2531323 pixels green



910593 pixels blue
within green area



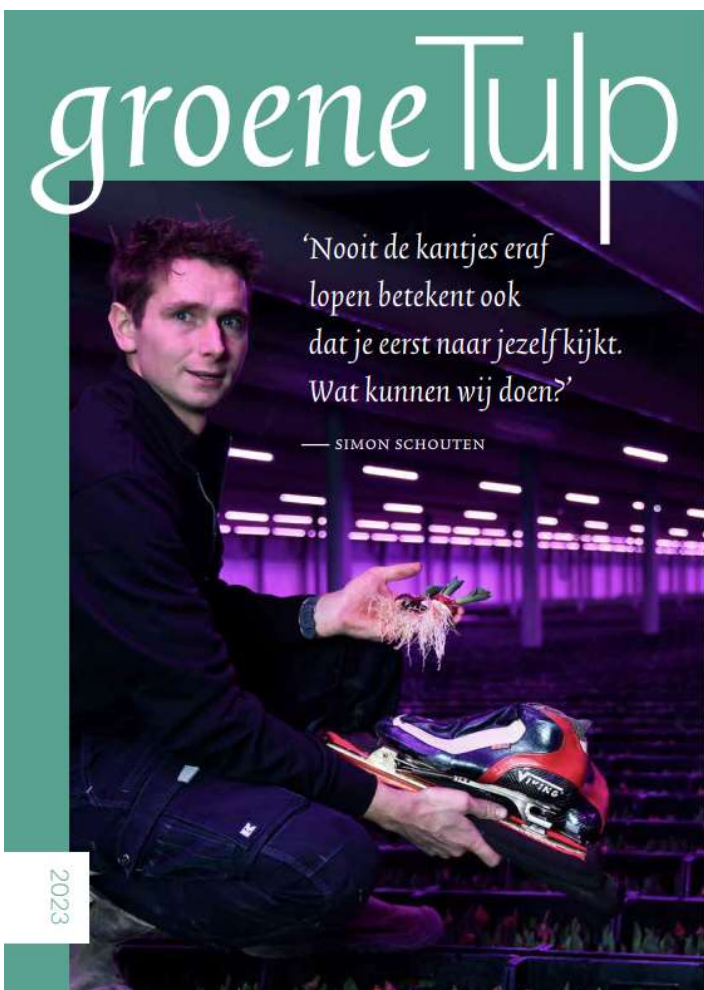
Percentage coverage 36%

WP5: Presentation and demonstration



- Organizing field days and events
- Sharing experiences and results in farmer study clubs
- Communication on social media
- Collaborating with governmental bodies, water boards, nature organizations
- Creating an ecosystem!





Tulip glossy

INTEGRALE GEWASAANPAK



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Results & experiences previous Green Tulip



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- **Cover crops** have an effect on yield and disease repelency
- **Crop treatment** with green products and DSS resulted in a significant lower environmental impact
- **Bulb treatment technology** proven effect and less emission
- **Bulb treatment** with biologicals is equal with the current chemical standard yet not robust but...
- **System approach** new systems are deployable but with less bulb reserves not yet consistent enough – zero emission is possible

Broad approach is essential

Communication – positioning as sustainable platform for tulips



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The road to 0 impact for a bright and healthy future for tulips



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Collaborate, experiment,
innovate and integrate
into a 0 impact growing
system.

Communication and
working together in an
ecosystem

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Partners PPS Green Tulip



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Partners in the ecosystem



WEERBAARHEID
IN DE PRAKTIJK



RAAK-mkb
Biostimulanten in de
tulpen teelt



Thank you for your attention

