



KEYNOTE SPEAKER

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TKI Horticulture  
& Starting  
materials

## RESOURCE USE (Adaptation and Mitigation)

**Resource efficiency / water and energy /  
circular economy / fertilization**

**Next-level agriculture\***

**\* Food Transitions 2030, Wageningen UR**

## Next-level agriculture



- Challenge: **climate resilient production** is necessary for production security (to adapt to changing weather conditions and to prevent soil depletion)
- Solution: it is vital to develop systems that optimize the use of soil, water and other critical inputs that are used for production.
  - R&I: transition needed to resilient production ecosystems for harvest security
  - This includes more **genetic diversity**, stimulating **biodiversity** in soil and plant environment, better use of symbiose with **useful micro organisms** ( ‘2nd genome’ ), and **adapting cropping systems** (e.g. inter- and multi-cropping).



- Challenge: environmental sustainable production and scarce resources require **efficient and circular production methods** (so they do not affect the environment)
- Solution: in a **controlled environment** a further decrease in inputs is possible and recovery of unwanted outputs leading to a circular system
  - R&I is needed for resilient growing systems with **minimal inputs of water, nutrients, energy and chemicals**
  - R&I is needed for a transition to **‘green chemicals’ for biocontrol** of plant diseases
  - R&I is needed for **optimizing the genetic basics** in challenging environments

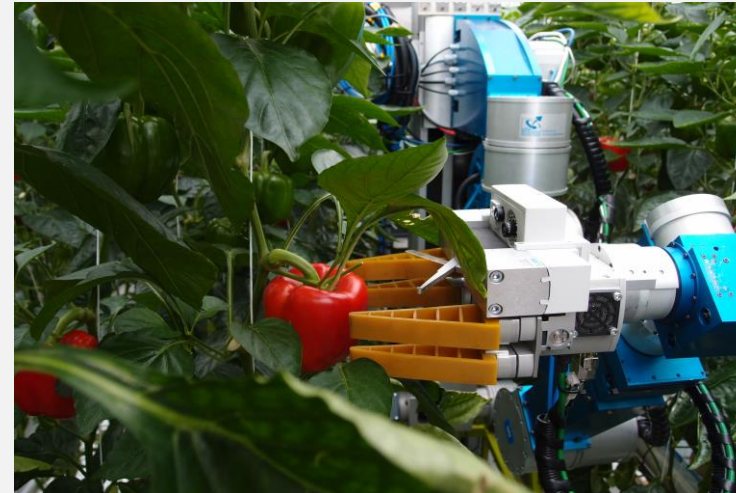






- Challenge: society demands the **transition from fossil to renewable energy** and more self-support in energy supply
- Solution: horticulture is frontrunner in the use of renewable energy: solar, geothermal, heat&cold storage and (industrial) waste heat in smart energy grids
  - R&I: energy efficient production needs **new design, plant varieties and materials** for protected cultivation and **new climate control strategies** for (largescale) economic feasible transitions





- Challenge: to remain competitive, **labour efficiency** and **product quality** have to be improved
- Solution: high value crops make **precision farming and robotics** economic feasible, provide optimal plant control and challenging work for young highly educated people
  - R&I needed for **intelligent sensor applications** and **Decision Support Systems** to detect, monitor and handle individual plants
  - Further development of **robotics** for logistics and handling procedures in horticultural processes



- Challenge: other sources of **valuable bio-based ingredients** are necessary
- Solution: a very wide variety of interesting genetic plant resources has the potential to replace (synthetic) ingredients and components to be used for new applications. This provides **new market opportunities** for producers and other SME's in the chain
  - R&I needed for **further understanding of genetics and plant physiology of pathways** for innovative bio-compounds and development of **new cropping systems**.