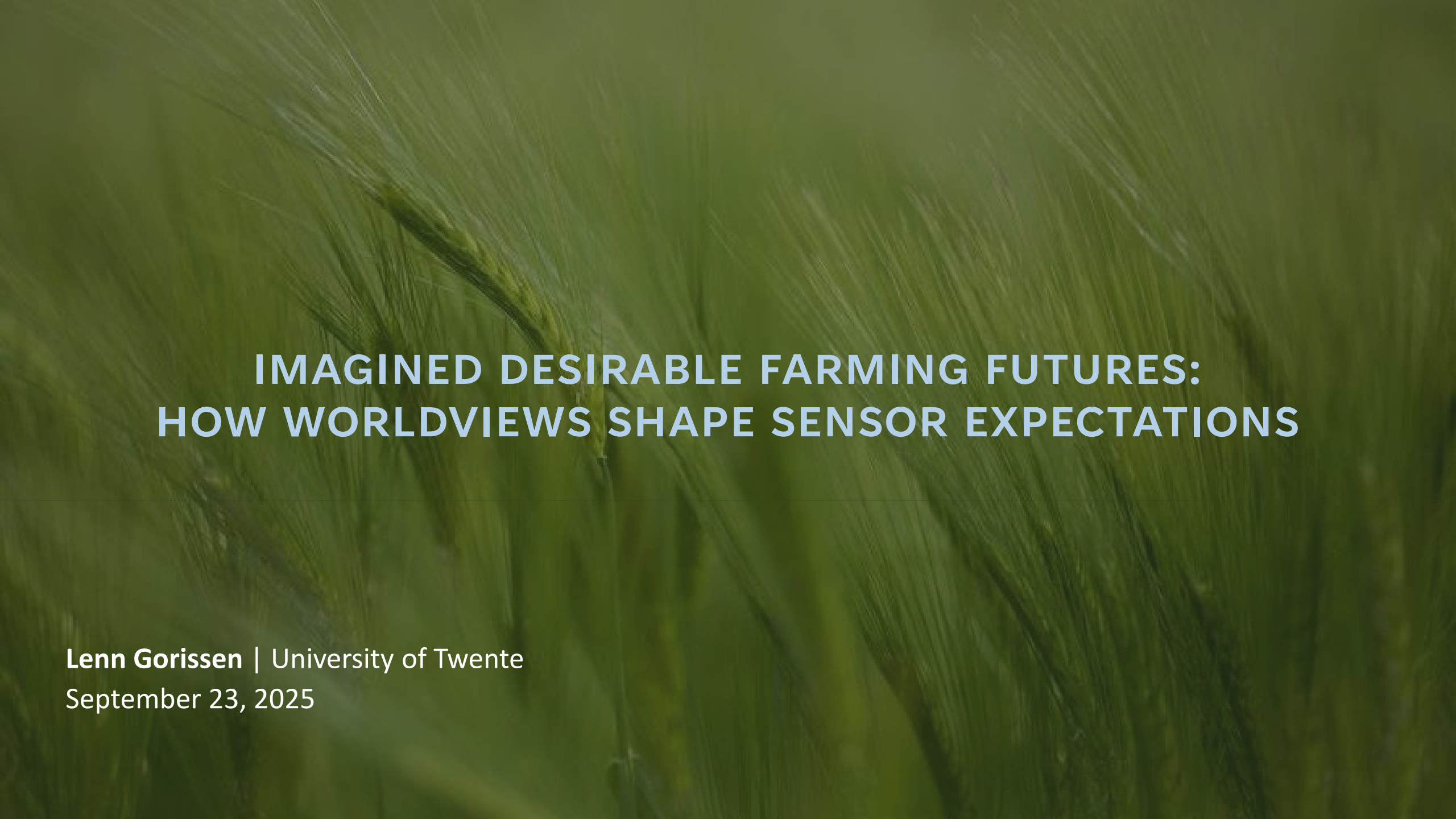

IMAGINED DESIRABLE FARMING FUTURES: HOW WORLDVIEWS SHAPE SENSOR EXPECTATIONS

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(Dutch) Agriculture & sensors: navigating pressures & futures

- Sensors promoted as key to 'sustainable' agriculture, addressing environmental & societal pressures.
- But role is contested
  - Reflecting beliefs about societal progress, the role of farmers in society, what nature is, does & how we ought to relate to it.
- Core issue: Competing views on desirable farming futures.

- Research:
  - ➢How do key actors in NL (farmers, manufacturers, agri scientists) imagine desirable farming futures & what are their expectations of sensors for facilitating these futures?
    - Focus on entangled beliefs about society, technology & ecology
  - ➢19 semi-structured interviews (20 informants):
    - 12 farmers (11 interviews, incl. 1 couple) (6 conv., 6 agroecological)
    - 2 agricultural scientists (Synergia project)
    - 6 sensor company representatives

Future #1 – *Optimised Coexistence*

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National food security

Farmers' shrinking profit margins

Increasingly restrictive input regulations

Attracting the next generation of farmers

Water scarcity & over-irrigation

Soil depletion through nutrient leaching

Surface water pollution from input runoff

Sensors support financial sustainability by improving input efficiency, cutting costs, reducing crop loss, & lowering energy & fuel use

Weather sensors deliver real-time data to assess disease risk, enabling targeted chemical use & less preventive spraying

Sensors help attract & engage younger, digitally native generations

Sensors & weather models optimize irrigation using real-time soil moisture & rainfall data, reducing water waste

Nutrient sensors enable precise fertilization & reduce leaching, especially with drip irrigation for targeted delivery

Weather models help farmers time chemical use by forecasting rainfall

Society

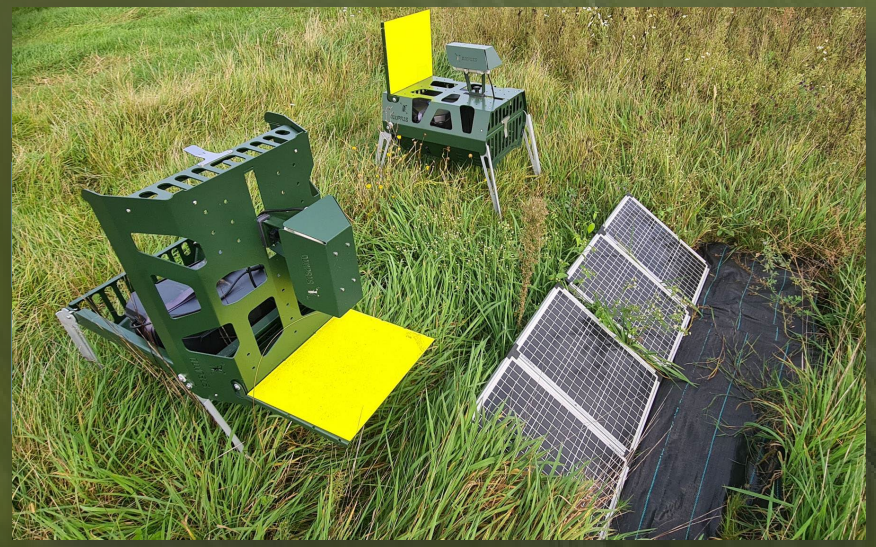
Ecology

'Eco-friendliness' to refer to sustainability, focusing on minimizing negative impact (through sensor use)

'Nature-inclusive agriculture' as guiding principle for agroecosystem design. Balancing act:

- Natural habitats 'take space' from agriculture
- Biodiversity secondary to food production/security

Future #2 – *Integrated Harmony*



Biodiversity sensors help farmers track ecosystem impacts & beneficial species for natural pest control

Limited R&D as soil is considered a “black box,” deterring investment + manufacturers target conventional farmers for profitability

Nutrient sensors validate the higher nutritional value of eco-based crops, encouraging sustainable farming & helping farmers promote benefits to consumers

The irresponsible harm to health & nature from conventional farming

Substituting (chemical) inputs by stimulating ecological interactions

Restore & maintain soil quality & (soil) biodiversity

Production of high-quality, nutrient-rich food

Farmers as "doctors," providing health-boosting products as "preventive healthcare"

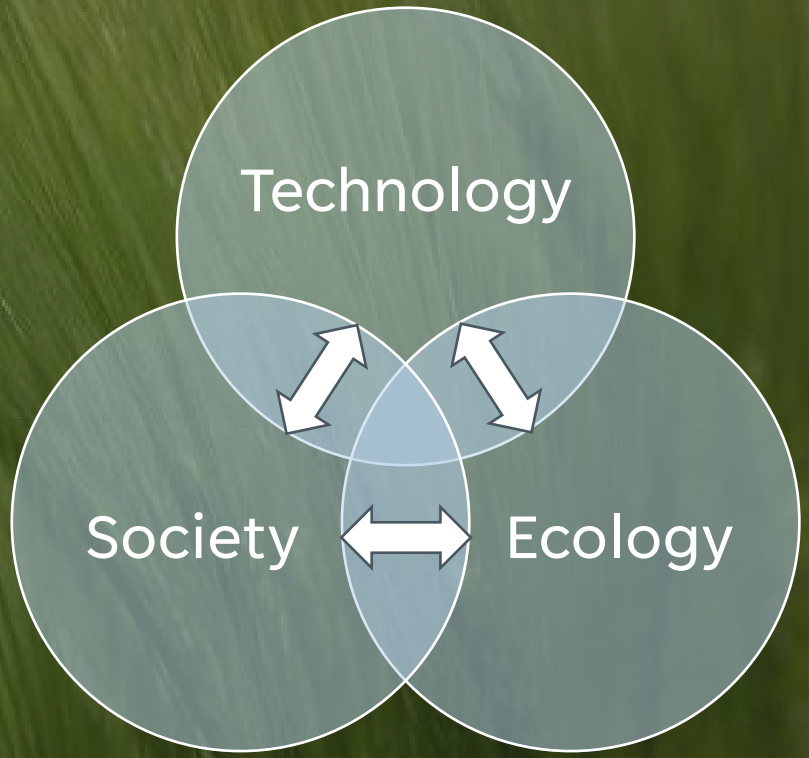
Society

Ecology

While not (yet) scientifically proven, farmers believe ecology-based practices boost crop nutrient density

Farmers see nature as a cultivation partner: emphasizing fungi’s nutrient exchange & plants’ restorative roles. Minimal intervention & trust in natural processes foster resilient agro-ecosystems (ecology as technology)

THANK YOU FOR LISTENING!



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