

# A perspective on Agri-food Testing and Experimentation Facilities

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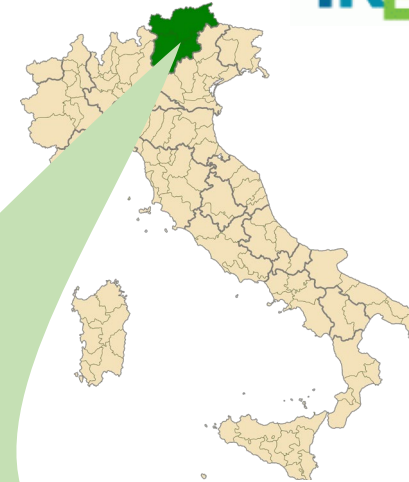
WORKSHOP ON TESTING AND EXPERIMENTATION FACILITIES FOR  
AGRI-FOOD UNDER THE DIGITAL EUROPE PROGRAMME

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# Where is this perspective coming from?

- FBK – research and innovation,  
*IoT and AI for agriculture*
- TESSA Agritech – **entrepreneurship,**  
*business*
- Trentino – **location, location, location!**  
*multi-actor stakeholders*

**TRENTINO**



# Outline

- Manage complexity
- 3-D analysis
  1. Technology
  2. Business
  3. Impact and sustainability
- Take-away remarks for TEF

**CHALLENGE**

**IMPACTFUL**

**7 YRS SUCCESS**

# Manage complexity...

- Many variables of **agrifood primary production**
- Type of crop
- Type of soil
- Type of pests and diseases
- Type of weather
- Availability of resources
- *Cause-effect validation by experimentation can only follow **seasonal time cycles**, unless...*



**CHALLENGE FOR TEF: Parallelise efforts ensuring valid and complementary results**

# (1/3) AI Technology

- Do something **REALLY** useful for farmers
  - **AI for predictions** is the best bet:
    - reduce manpower costs with automation
    - reduce input costs because of early and precise
  - Spotting early **pests and diseases** allows huge savings of agrochemicals
  - Soil conditions, mapping situation with high granularity enables efficient and cost-effective **fertilization**
  - **Irrigation**, better control enables reducing use of water
  - **Estimate production** (quantity but also quality)



***TEF take-away: ensure AI targets substantial value-add for the farmer***



# (1/3) Good AI needs good (and a lot of) data

- Agriculture is a *patience* business but we do not have years of time
- “Reinforcement learning”: short-term cycles vs. long-term ones
  - Recognise and intervene (pests, water, fertilizer) – immediate feedback, do stg now
  - Strategies of treatment and influence of these on crops – wait until you harvest, seasonal cycles
- Parallelise efforts! Replicate experimentation, this is where TEF must make a difference
- It’s a global challenge, need actors to come together rather than keep competing
- Target standardized open-data collection to avoid fragmentation
  - Let the best inferences emerge from data-wealth!!!
- Experiment new schemes that encourage data sharing (people’s network)
  - Foster scale



***TEF take-away: target complementarity and replicability of results, foster open-data collection***

**BUT...technology and novel practices all  
come at a cost**

## (2/3) Economic sustainability and incentives

- Growers need to invest their TIME and MONEY
- They work everyday with limited margins in both dimensions
- Solutions must be affordable and / or economically sustainable
- Who can help? Seek and involve additional stakeholders
- Clearly show the cost of solutions and what value do they bring to the farmers' business bottom line
- ROI – How long before there is a Return on Investments?



***TEF take-away: explore how to foster creation of business value for the farmers***



# (3/3) Sustainability – importance of LCA for supported experimental activities

- Green revolution increased production at a cost
- Agrochemicals and reduced biodiversity
- Organic farming brings additional costs that have to be supported with increased revenues...



***TEF take-away: explore implementation of reward schemes for sustainable practices***

# Conclusions



- Address farmers *field* problems
- Data collection (open, replicability of experiments)
- Shortcut seasonality parallelise efforts
- Involve additional stakeholders to support farmers
- Novel business models for economic sustainability
- Environmentally sustainable practices and incentivised adoption



***Each TEF must be a component of a predesigned whole, important to get 7yrs target masterpiece right!!***