“Breeding for the Future”

UPOV seminar.

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Stefan van der Heijden

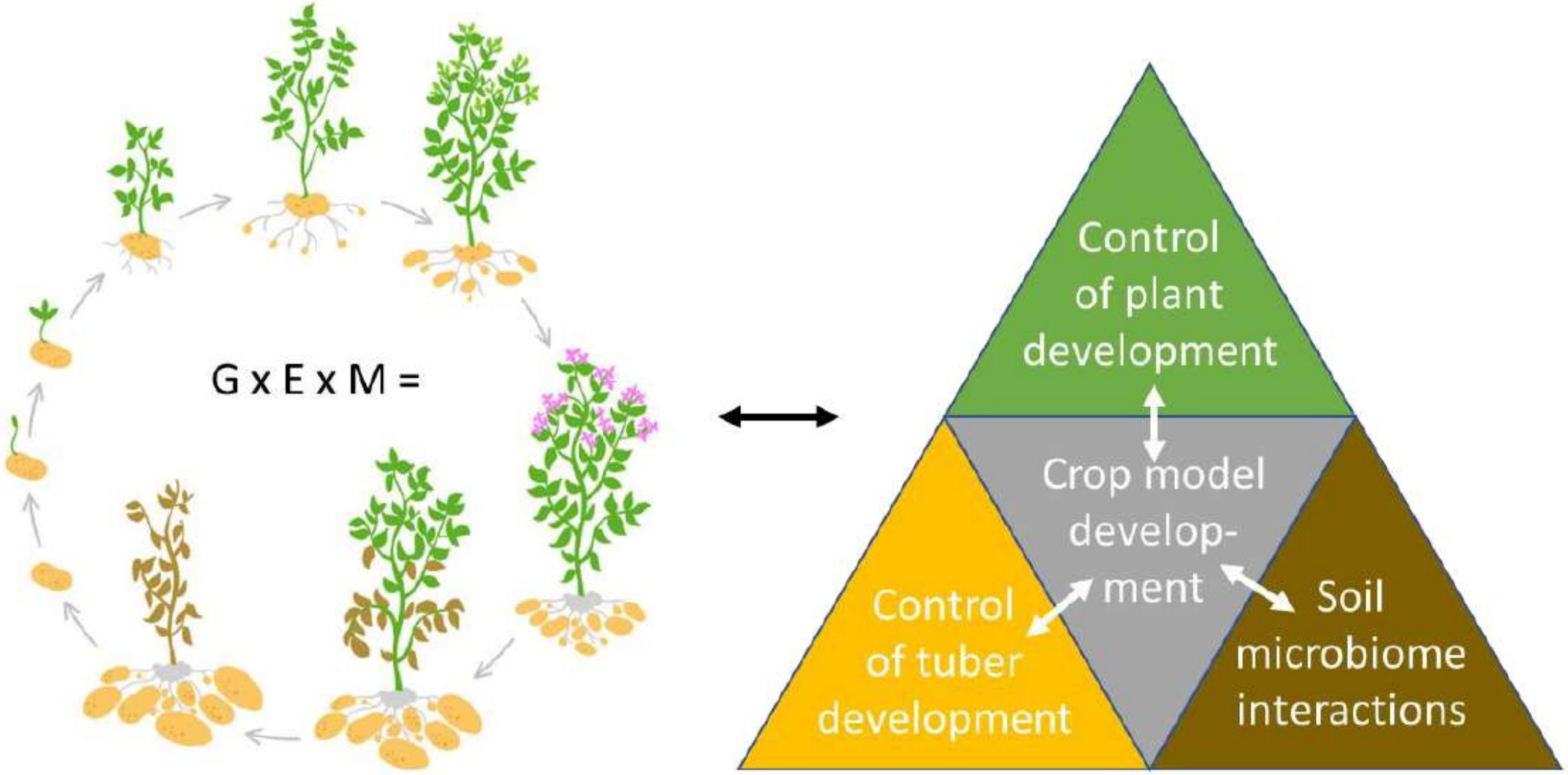
Associate INNOVA CONNECT

Breeding for the Future.

- Breeding is per definition for the future.
  - Issues
    - *Access/time to market*
      - Duration of breeding process
      - IP (DUS)
      - Obligatory or voluntary VCU
    - *Knowledge*
      - Putative conditions of the production environments in the future
      - G x E x M interactions. Impact on genetics and breeding process is complex

Research approach for the future

- ✓ Integrating knowledge from the full value chain
- ✓ From reactive to predictive breeding
- ✓ Focus on adaption (= resilience) to different environments and reducing inputs.
  - ✓ Biotic (reasonable under control, but …)
  - ✓ Abiotic (complex genetics and difficult as breeding target)
- ✓ Predict and verify via lengthy empirical descriptive testing?
- ✓ Faster access of new products to the market is needed.


G x E x M =
Control of plant development
Crop model develop-ment
Control of tuber development
Soil microbiome interactions

Required technologies

- Information network
  - Data (omics, phenotyping, environments, germplasm coverage and access)
  - AI-tools
  - Mechanistic and statistical models
  - Bioinformatics
  - Useful for multiple species
  - ?
- Understanding fundamentals of crop production in changing climate
- Develop durable breeding concepts
  - Tools
  - Genetic variability
- Definition of relevant parameters for verification experiments in vivo
- Access by users – transparency

Impact on the value chain

- More uncertainty in value chain
  - Breeders and Producers (income, RoI)
  - Retail (supply)
  - Consumer (trust)
- Broader portfolio is needed
- Orphan crops will increase
- Market access should not be hampered by
  - DUS
  - VCU
  - Other (IP-)issues
- Transparency and understanding of consumers in general
  - Claims.
    - Sustainability
    - Health
    - Phytosanitary

Thanks for your attention