



Fascination of  
Plants Day  
2024



**SESVANDERHAVE**

sugar beet seed



# Hendrik Tschöep

Director of Global Breeding at SESVANDERHAVE



Plants  
for the Future  
European Technology Platform

with support from



Euroseeds  
Embracing Nature

copa\*cogeca  
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ILVO  
Flanders Research Institute for  
Agriculture, Fisheries and Food





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# Developing new plant varieties

## How Public-Private Partnerships can accelerate breeding progress

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# Why is this presentation interesting?

- 1. Contribution of breeders** from the perspective of a minor, though important crop
- 2. Challenges** breeding companies face
- 3. How public-private-partnership** can help circumventing some challenges





# SESVanderHave is part of Groupe Florimond Desprez and member of Euroseeds

**35**

**National member associations** from EU Member States and beyond, which in turn represent many thousand seed businesses across Europe.

**79**

**Direct company members** from family businesses to multi-nationals, including seed related industries.

Euroseeds has members also in other parts of the world: e.g. **Morocco, South Africa, USA, Canada...**



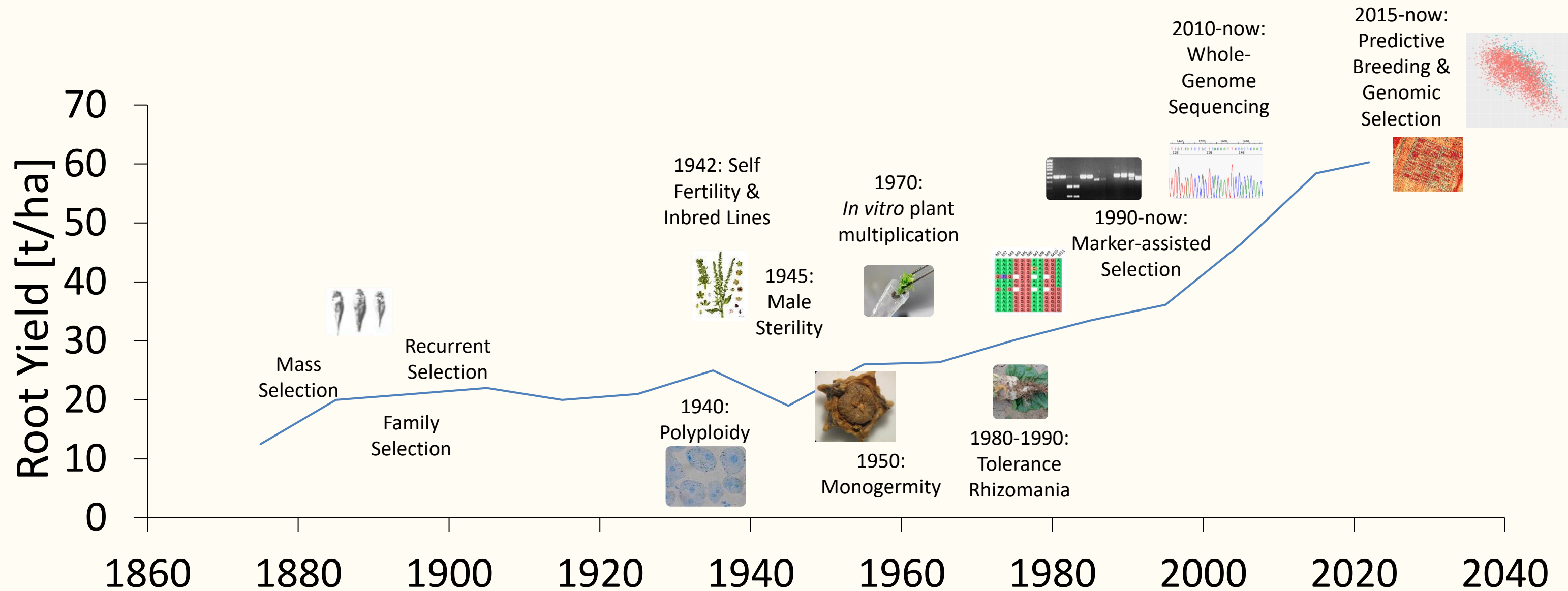
## Euroseeds

**The voice of the European seed sector**

**“The R&D budget and strategy of a company depends upon the crop specificities, market size, regulatory frameworks as well as technology readiness for each crop”**

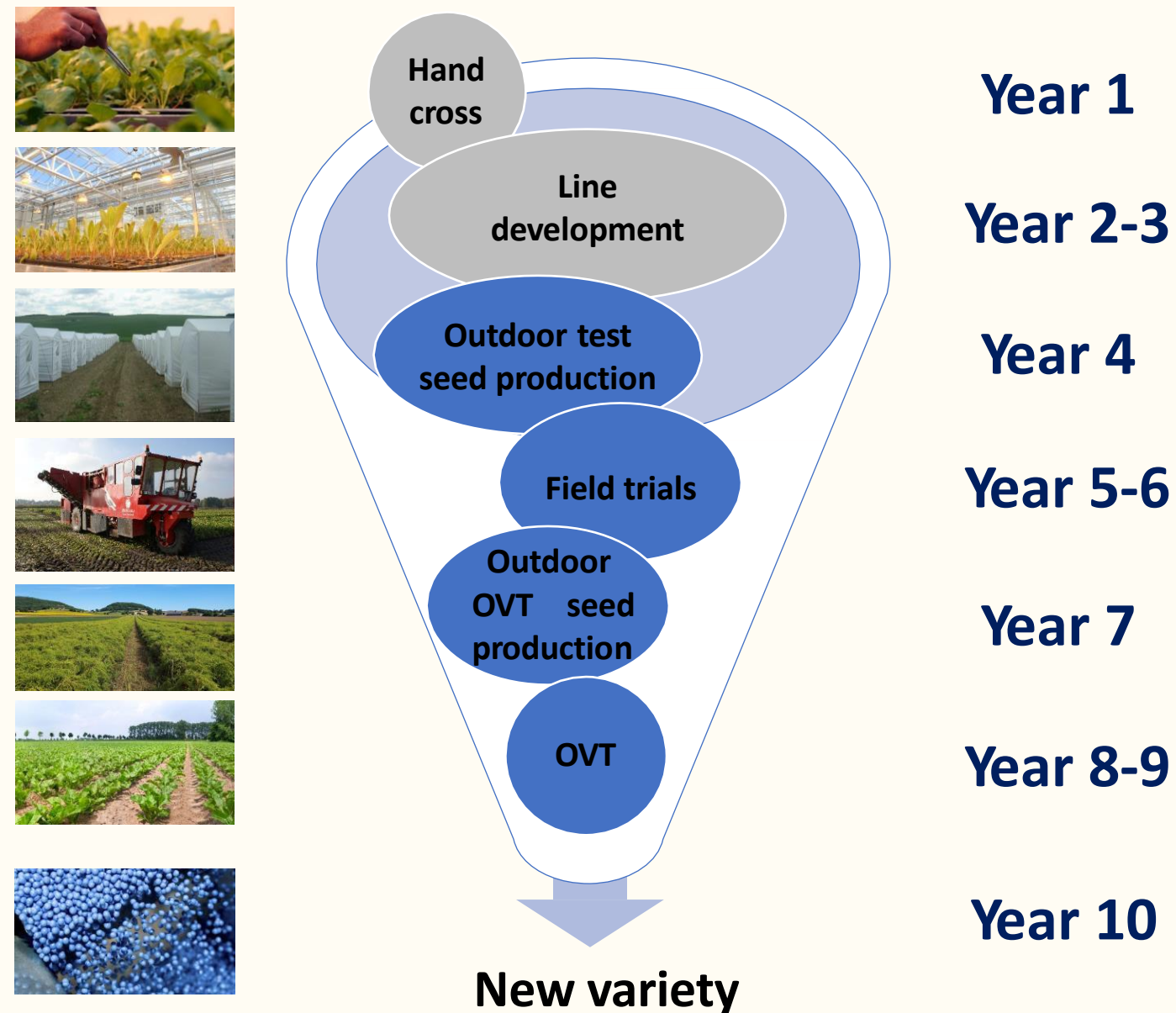
# Scientific progress is the main driver for yield increase

History of major scientific landmarks since start of sugar beet domestication

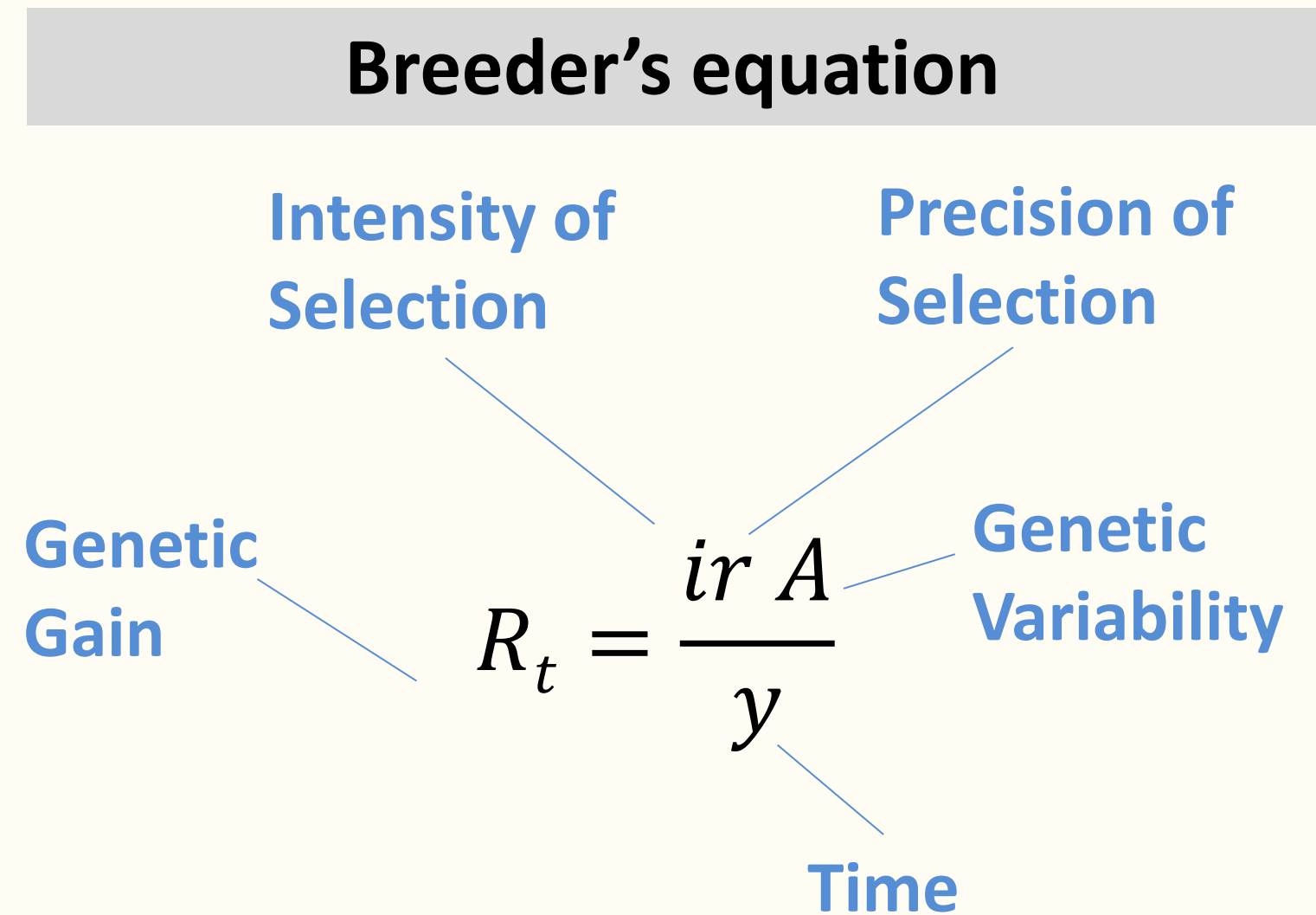


# The development of a new sugar beet variety takes up to 10 years

Variety development in time with major steps



OVT = Official Variety Trial



# The agro-ecological transition requires more and faster varietal solutions than ever

For the breeding companies this is a significant challenge, but an opportunity at the same time



## CHALLENGES FOR VARIETY DEVELOPMENT

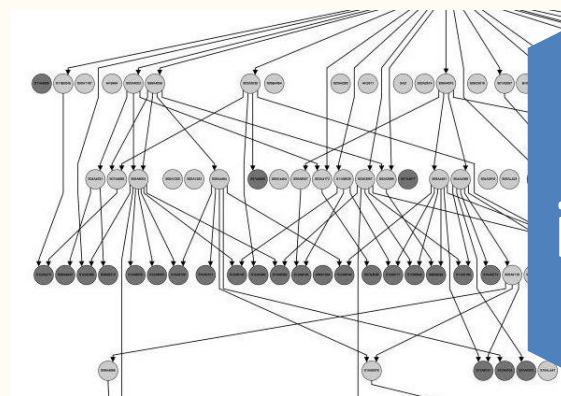
1. More **complex** trait profile
2. Adaptation of varieties to **agricultural practices** of the future
3. Even **faster development** of varietal solutions





# In the past, plant breeders had to handle less complex information

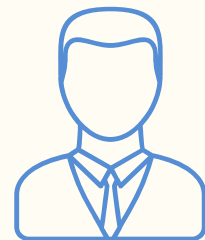
Major sources of information plant breeders used to advance their breeding programs



Pedigree  
information



Yield and  
quality data



**The BREEDER**

*“Knew and decided  
everything!”*



Disease  
nursery  
data



Molecular  
markers

Experience/  
gut feeling



# Plant breeding has become increasingly complex due to more rapid generation of scientific knowledge

A diverse set of expertises is required to be successful



Breeders are part of a multifunctional team

Modern Project Managers

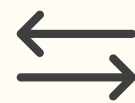
Team players with people management skills

# Plant breeding has become increasingly complex and requires a diverse set of expertise & specialization

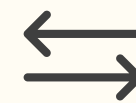
Insourcing of scientific expertise can happen via different routes

- Ensures in-house expertise
- Rapid progress
- Increasingly costly
- Requires training

  
**Talent  
acquisition**



  
**Breeding  
company**



  
**Academic  
research &  
research  
institutes**

- State-of-the-art expertise
- Limited secrecy agreements



# Public-Private Partnerships facilitate access to cutting-edge science especially for small & medium breeding companies

Insourcing capabilities of all required scientific expertise is limited for smaller players

## Bottlenecks for small and medium-sized companies

- **Lack of detailed scientific expertise** in all required domains
- Scientist cover **multiple domains**
- **Lack of time** studying all relevant scientific literature

## Benefits for private actors

- Access to **specialized knowledge**
- Access to **scientific exchange** network

## Benefits for public actors

- Access to **large-scale breeding data**
- Possibility to **perform larger-scale operational activities** (eg field trials)
- Access to detailed knowledge about **minor crops**

# A Research collaboration between SESVanderHave and IfZ has led to the identification of virus yellows resistance gene in sugar beet

Both project partners contributed complementary expertise to the success of the project


- **PolerRes Project** in collaboration with IfZ (DE), 2019-2023
- Objective: Identification of molecular mechanisms of **resistance to Poleroviruses (BChV and BMV)** in Sugar Beet
- Outcome: Identification of **resistance gene against BChV**
- Results **published** (Rollwage *et al.*, 2024)



Plant Biotechnology Journal (2024), pp. 1–13

doi: 10.1111/pbi.14333

## Recessive resistance against beet chlorosis virus is conferred by the eukaryotic translation initiation factor (iso)4E in *Beta vulgaris*

Lukas Rollwage<sup>1</sup> , Hilde Van Houtte<sup>2</sup>, Roxana Hossain<sup>1</sup>, Niels Wynant<sup>2</sup>, Glenda Willems<sup>2</sup> and Mark Varrelmann<sup>1,\*</sup>

<sup>1</sup>Institute of Sugar Beet Research, Göttingen, Germany

<sup>2</sup>SESVanderHave, Tienen, Belgium

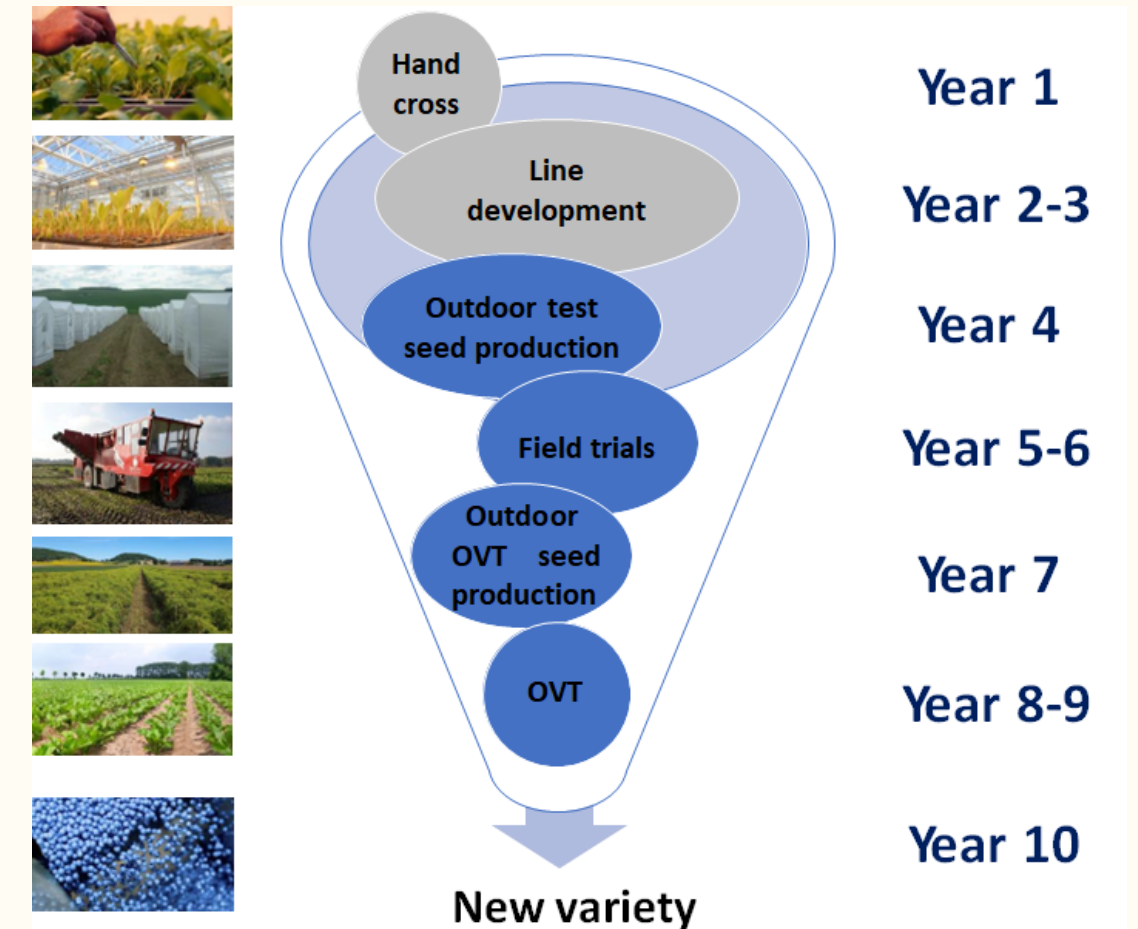


# Plant Breeding requires a stable policy outlook to make correct strategic investment choices for the future

This is even more crucial for small breeding companies

## Policy outlook:

- Regulations concerning **agricultural policies and sustainability** criteria
- **Funding frameworks**
  - Longer duration
  - Open for smaller projects
- **Recognition of plant breeding** as a major contributor to a sustainable and effective agriculture



# Increasing complexity and greater expectations require especially medium & small breeding companies to adapt

1. Plant breeding has **significantly contributed to food security** and will have to play an even more important role
2. Higher **complexity** and accelerated **demand** for innovative solutions
3. **Private-Public-Partnerships** assure that especially small & medium-sized breeding companies have **access to state-of-the-art scientific expertise**





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# Thank you!



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