

Organic breeding in Europe

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Organic Plant Breeding

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OA in Europe: different markets



- ca. 4 ha
- small-scale organic farming
- direct consumer sales
- variable product



- ca. 40 – 400 ha
- large scale organic farming
- global market
- uniform product



Common concern in organic agriculture (OA)

Organic agriculture (OA) needs

- to deal with environmental variation;
- to create resilience and self regulatory capacity in their farming systems.

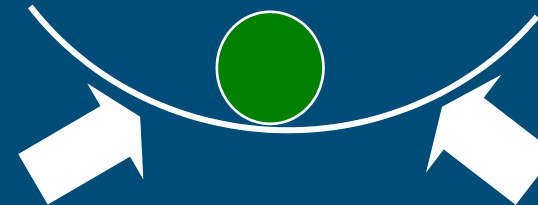
Conventional versus Organic approach

Control model



- focus on the problem
- ruling out variation
- continuous monitoring
- direct interference
- static balance.

Adaptation model



- focus on the system
- exploiting variation
- stimulating self regulation
- indirect management
- dynamic balance.

(Ten Napel *et al.*, 2006; WUR/LBI)



Organic breeding strategies

- Other priorities
- Additional traits



Organic cereal production: multipurpose varieties



for food & feed



for soil structure



for straw and compost



Cereal varieties for OA: straw length



- more straw
- more shade for
weed competitiveness
- less ear diseases



Relationship ear diseases and plant morphology

- Cultivars with a compact ears are always susceptible for Fusarium head blight



Coping with weeds: planophile leaf attitude



Cultivar: *Carolus* (planophile) (EISELE 1995)

less weeds



Cultivar: *Sperber* (erectophile) (EISELE 1995)

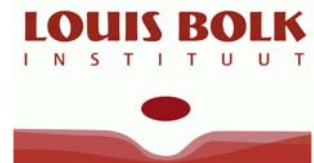
more weeds



Mechanical weeding: erectophile leave attitude



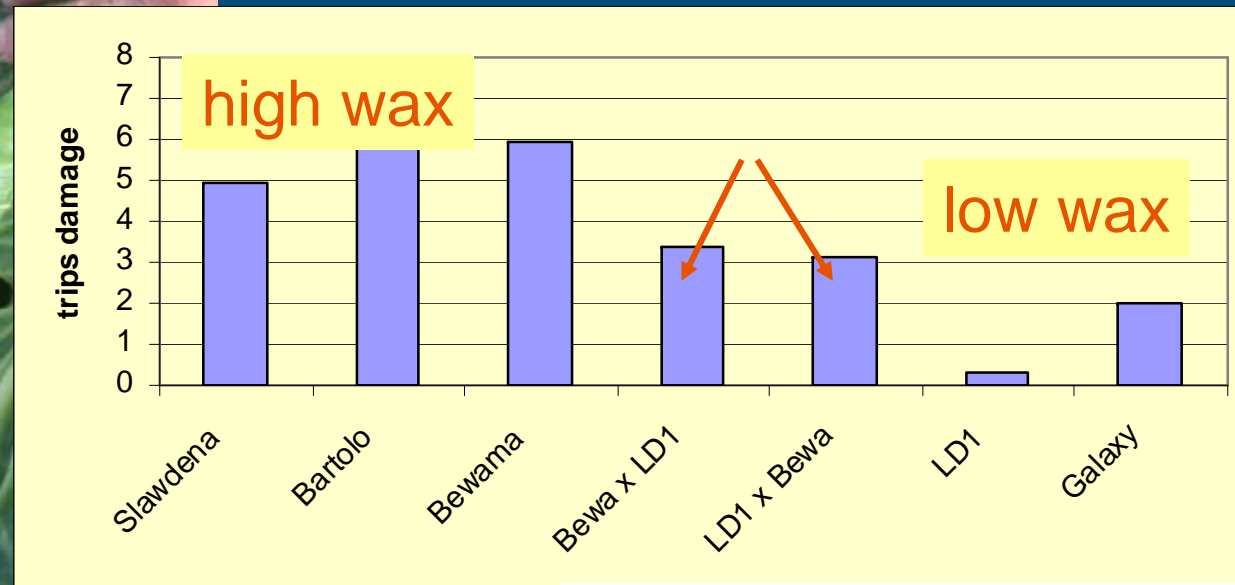
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Breeding research for trips resistance in cabbage



Breeding for more wax layer on leaves against trips damage in cabbage



Voorrips et al., WUR & LBI 2004-2007

Breeding for improved root systems

Adaptation to low-input soil fertility management requires varieties with:

- dense root system
- interaction with mycchoriza's



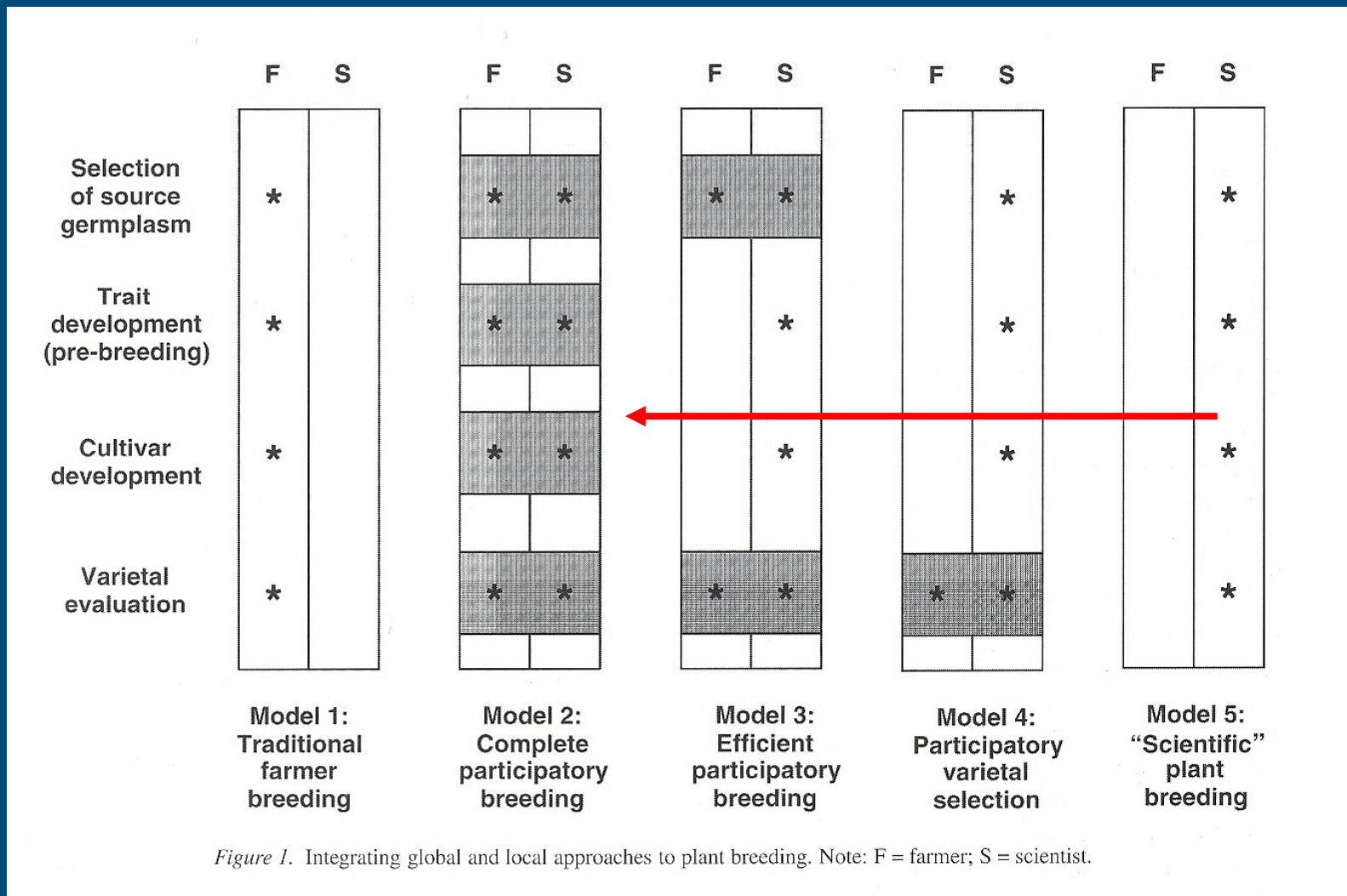
Wild type of onion



Modern onion variety
(De Melo, 2003)



Participatory plant breeding in Europe



Commercial organic seed production

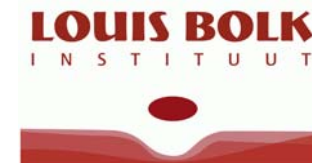


Also seed producers
and breeders
are converting
to organic!

Vitalis Organic Seeds/ENZA - NL



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Farmers' training in variety trials



Farmers' training courses in on-farm selection



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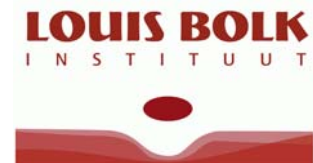
On-farm breeding in many EU countries



in the Netherlands



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On-farm breeding in France



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European cooperation

- European Consortium for Organic Plant Breeding (ECO-PB), www.eco-pb.org



- Eucarpia, section organic and low-input agriculture www.eucarpia.org

EUCARPIA

- EU Policy project Farm Seed Opportunities www.farmseed.net (2007-2009)



My seeds of hope!

- Biodiversity depends on the number of breeders!
- Open source breeding!
- From Fast to Slow-(food) breeding
 - for regional food diversity!
 - respecting the integrity of the farm-ecosystem and of life!



Thank you!

