
COBRA Grain Legumes Workshop

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COBRA



Overall goals:

- To support and develop organic plant breeding and seed production
- Focus on increasing the use and potential of plant material with High genetic Diversity (*Hi-D*) in cereals (wheat and barley) and **grain legumes (pea and faba bean)**
- Coordinating, linking and expanding existing breeding and research



Specific needs of germplasm for organic farming systems



- Good resistance against pests and diseases, esp. seed borne diseases;
- Ability to react to environmental, esp. climatic variability;
- High competitiveness against weeds



Specific aims

- Improve methods ensuring seed quality and health;
- Determine the potential to increase resilience, adaptability, and overall performance in organic systems by using crop diversity at various levels;
- Improve breeding efficiency and to develop novel breeding methods to enhance and maintain crop diversity;
- Identify and remove structural barriers to organic plant breeding and seed production; and
- Improve networking and dissemination in organic plant breeding



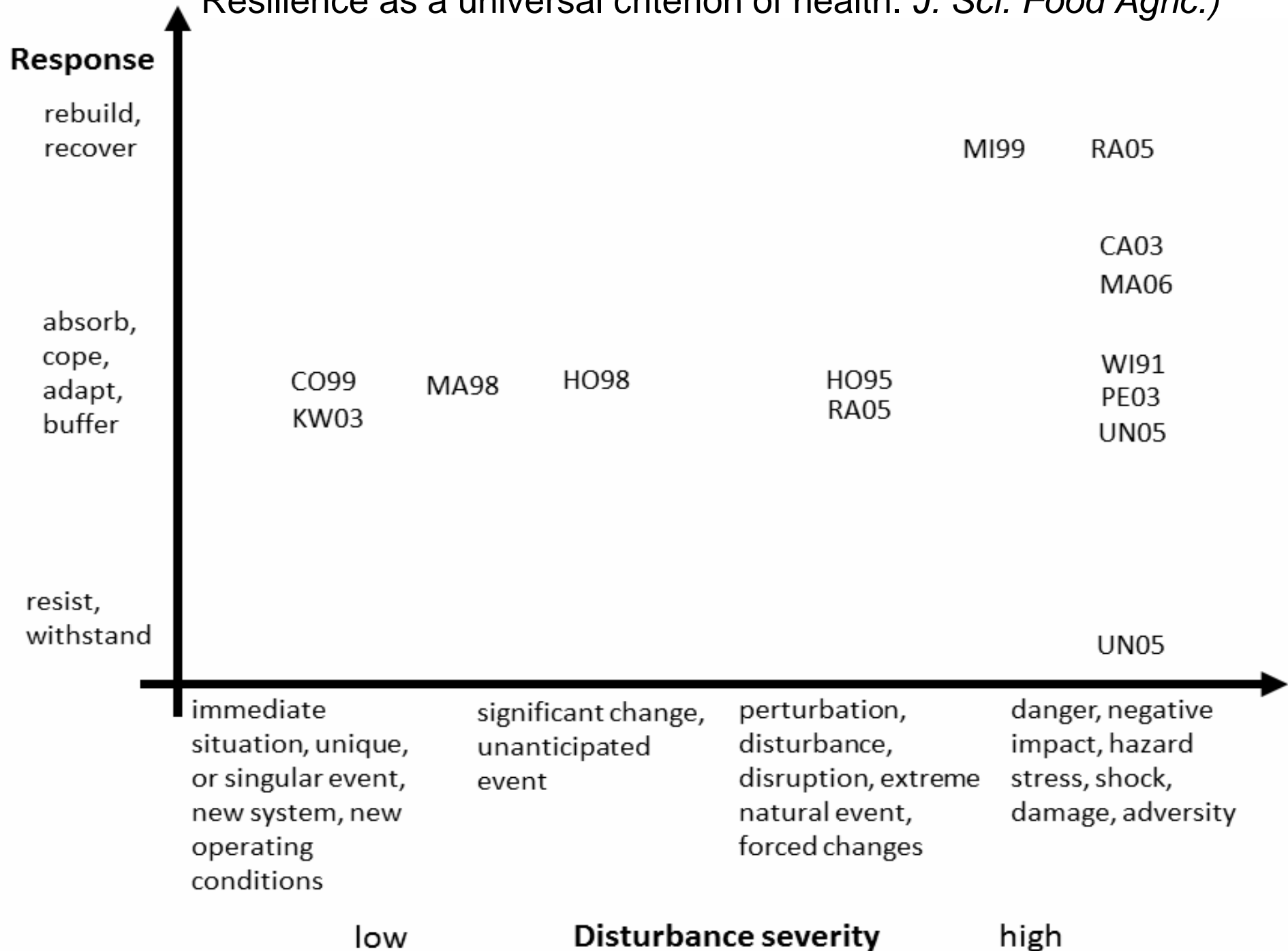
Genotype-Environment Interactions

Environment factor	Conventional	Organic
Soil	<ul style="list-style-type: none"> ➤ Fertilisers ➤ (Breeding) 	<ul style="list-style-type: none"> ➤ Organic fertilisers ➤ Breeding
Harmful organisms	<ul style="list-style-type: none"> ➤ Prevention ➤ Resistance breeding ➤ Pesticides 	<ul style="list-style-type: none"> ➤ Prevention ➤ Resistance breeding ➤ Very few pesticides
Climate	<ul style="list-style-type: none"> ➤ Breeding 	<ul style="list-style-type: none"> ➤ Breeding

In conventional agriculture environmental variations are reduced as much as possible, in organic systems these have to be dealt with flexibly.



Classification of resilience definitions (Döring et al, 2014: Resilience as a universal criterion of health. *J. Sci. Food Agric.*)



Adaptation to variable environments

Populations with **functional Diversity** can react to variable environmental conditions more easily than genetically uniform populations.



Functional diversity for what?

- Resistances
- Nutrient use
- Root and shoot architecture
- Plant associated microorganisms (PGPR, PHPR)
- Allelopathic interactions
- Etc...



COBRA at the Danish Organic Congress

- Grain legume workshop **9.00-11.00**
- Organic and High Diversity Plant Breeding **11.30-13.00**
- Breeding of Cereals and Grain Legumes for Organic Farming
14.00-15.30
- Farmers Rights and Policy Issues in the Context of Plant
Breeding for Diversity **16.15-17.45**



Grain Legume Workshop

- Breeding approaches (Annicchiarico)
- Screening activities
 - Performance (Kir, Kokare)
 - Diversity (Bavec)
 - Crop interactions (Grobelnik)
- Farming systems effects
 - Crop associations (Zimmer, Stoll, Dewaele)
- Seed health issues (Pecetti)

