

Tools to enhance resilience

MTT Agrifood Research Finland
Helena Kahiluoto, Hanna Mäkinen*
Sari Himanen, Karoliina Rimhanen &
Miia Kuisma

University of Helsinki, Institute of Behavioural Sciences
Reijo Miettinen & Sami Paavola

University of Jyväskylä
Marja Järvelä, Ari Paloviita &
Antti Puupponen

*featured in the creation of the poster

Uncertainty posed by climatic and socio-economic variation and change raises a need to enhance resilience and adaptive capacity of agri-food systems. We propose a new approach and practical tools for actors to build more resilient farms and food systems through dialogue in the networks and through utilizing response diversity.

Management for resilience through response diversity

Diversity in responses to critical change, variation and shocks has the potential to push the limits to adaptation further away and create safe space to act. This novel strategy creates efficiency in diversity and offers a tool to manage for resilience. Response diversity reduces sensitivity and provides a broader selection of means to cope with volatility and various plausible futures. But: **How to identify the efficient diversity?**

Adaptive capacity through dialogue

Dialogue in food supply networks is perceived to create flexibility through facilitating joint actions when facing change. Such change may concern weather and climate close or far in the globalised food system, their indirect consequences such as input or product prices, or migration which induces new demand. Whether cascading energy to buffer against price volatility or introducing diversity in marketing channels, new networks are needed. But: **How to communicate across borders?**

From theory to practice – two cases

‘One cultivar from each basket’

The set of barley cultivars available in Finland was clustered according to their response to weather that is critical for yield. MTT Official Variety trials (112 barley cultivars 1980-2009), weather data of the Finnish Meteorological Institute and farm data for validation were used. The weather response model was discussed and further developed in interaction with breeders. Its value is in opening a new perspective to yield and income stability with not more, but more efficient, diversity (**Fig. 1**), and it is tested in communication among breeders, farmers, industry and retail.

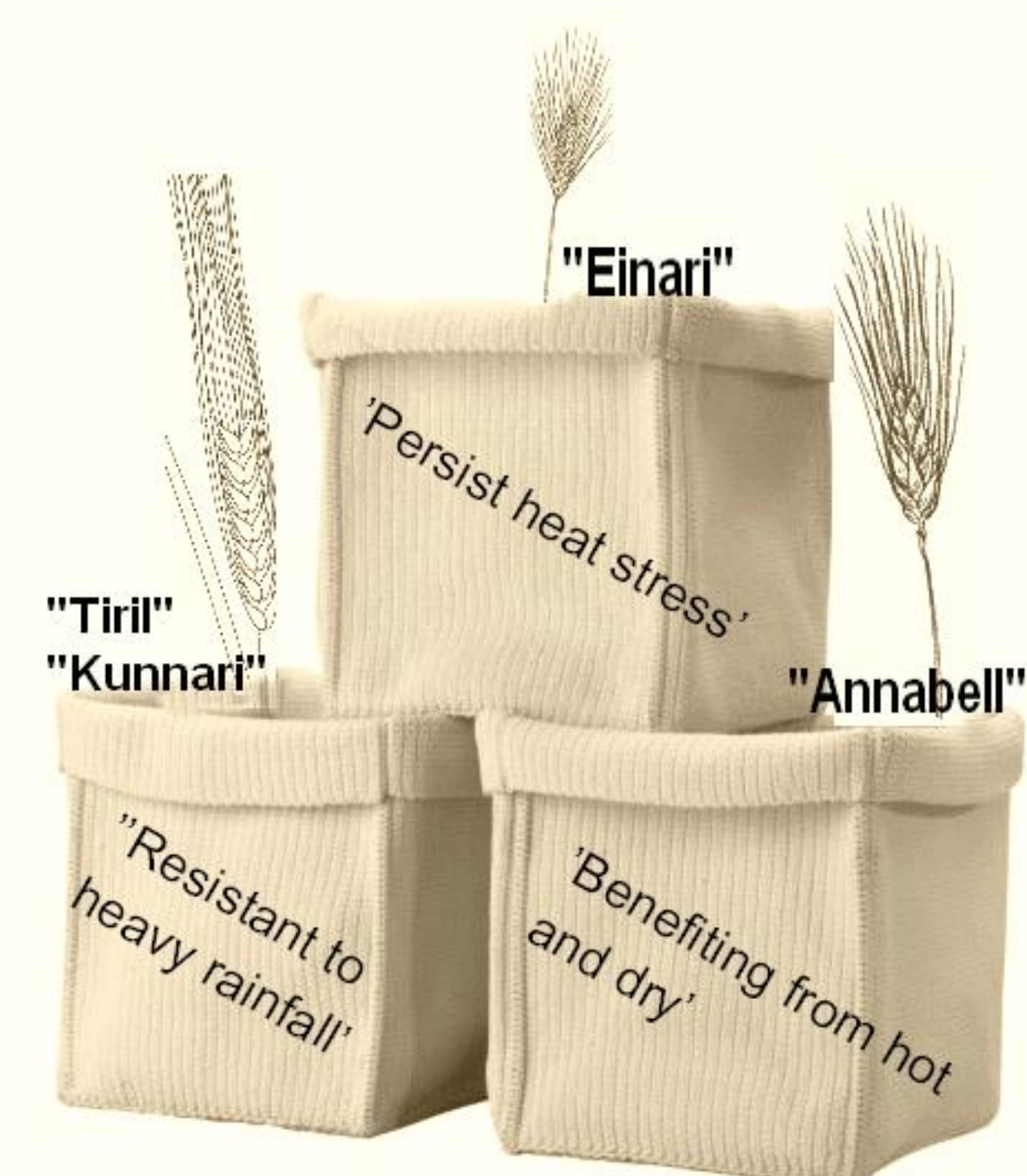


Fig 1. Yields can be secured through selecting cultivars which respond to weather different ways.

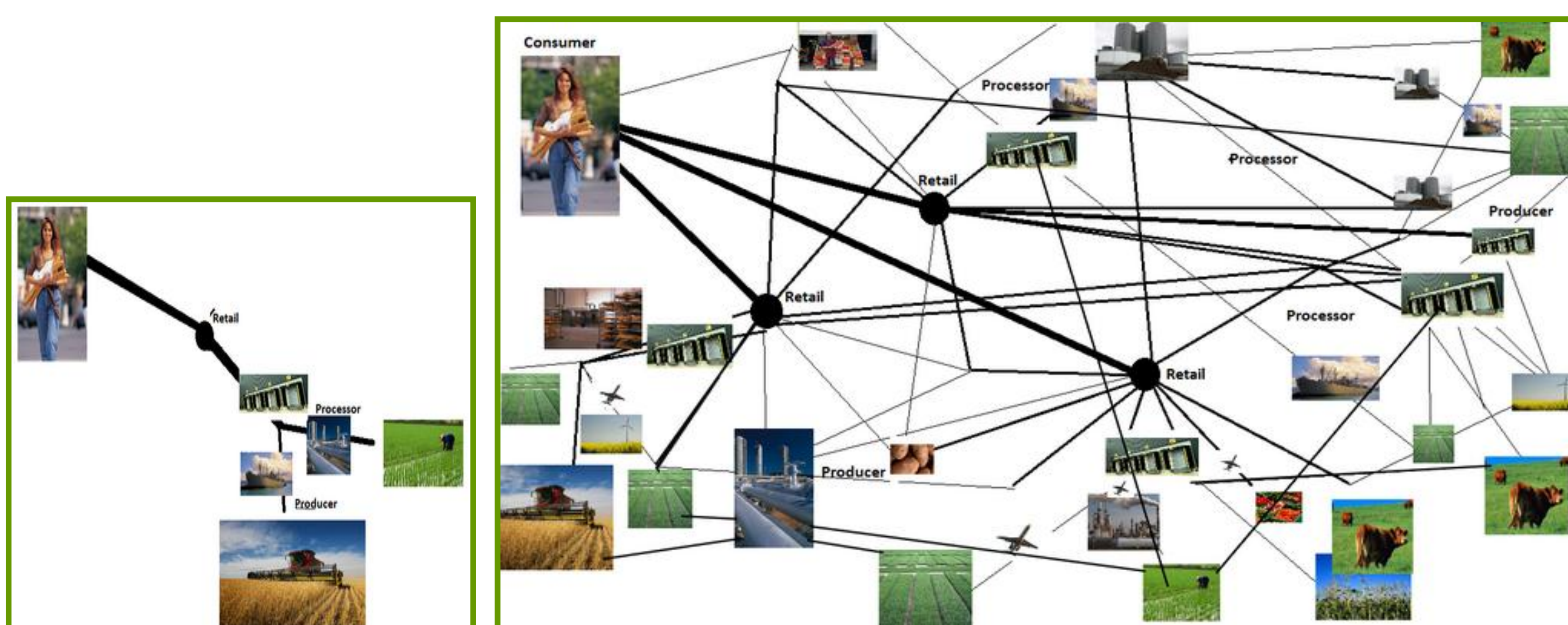


Fig 2. Which food web is more resilient? Does diversity of food suppliers stabilise food prices to consumers? Does diversity of market channels stabilise product prices to farmers?

‘Don’t put all eggs in one basket’

According to a Delphi study retail has most voice in European food supply chains and other actors perceived the situation vulnerable due to little say. Dialogue within a supply network identified in a case region will be facilitated to secure access to affordable food in face of global losses, price volatility or conflicts beyond the borders. Response diversity of marketing channels identifies and communicates options to enhance resilience (**Fig. 2**).