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IFSA Conference, April 2022

VACCARM !

Appraisal of adaptation strategies to reduce vulnerability to climate change of maize farming systems : farmers' viewpoint

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AGIR AGroécologie - Innovations - TeRritoires

MIA TOULOUSE

INRAE

Maize farms in Southwestern France

High regional anchorage
(DRAAF Occitanie, 2017)

Impacts from climate change

Water scarcity
(Senthilkumar et al., 2015; Caubel et al., 2018)

Need adaptation strategies
(Howden et al., 2007)

Dependency on irrigation
(DRAAF Occitanie, 2017)

X Without increasing dependency on irrigation

Need to enhan… …ical practices

Society problem

State of the art on adoption of practices

Numerous adaptations are proposed in the literature, to adapt to climate change

Bindi and Olesen, 2011; Senthilkumar et al., 2015

Holzhamper, 2020; Rickards and Howden, 2012

~~Systematic adoption and success of these recommendations on the farm~~

Heterogeneity of practices

Kuivanen et al., 2016; Solano et al., 2003; Yanuarti et al., 2019; Daydé, 2017

Still lack of knowledge

Need to understand farmers' [illegible]t regarding adaptation strategies to reduce [illegible]

Science problem

A two stages methodology

→ **Surveys in irrigated maize farming systems in SW France**

1. Qualitative stage

- **Expert farmers**
- **Elicitation of adaptation strategies**

2. Quantitative stage

- **Non-expert farmers**
- **Factors influencing choice of adaptation strategies**

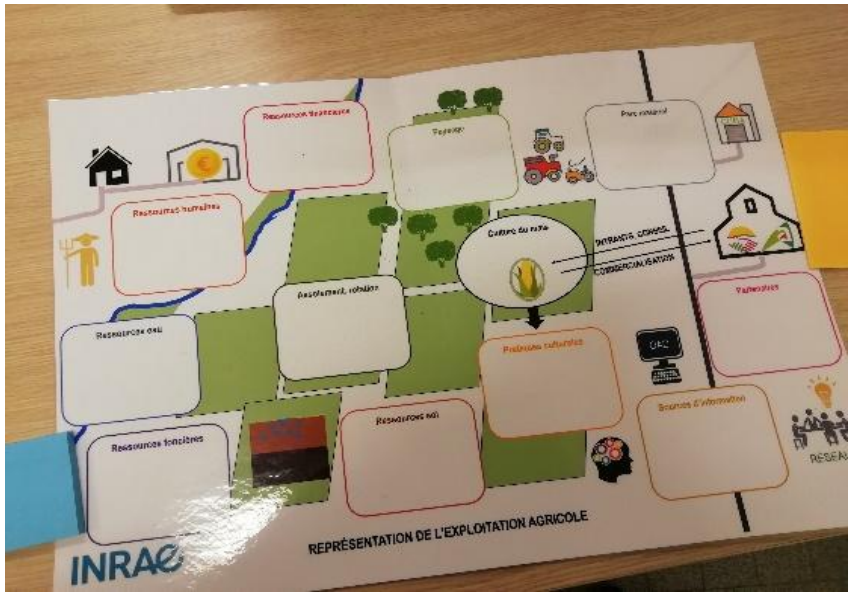
1. Qualitative approach

Objective → What adaptations do farmers use ?

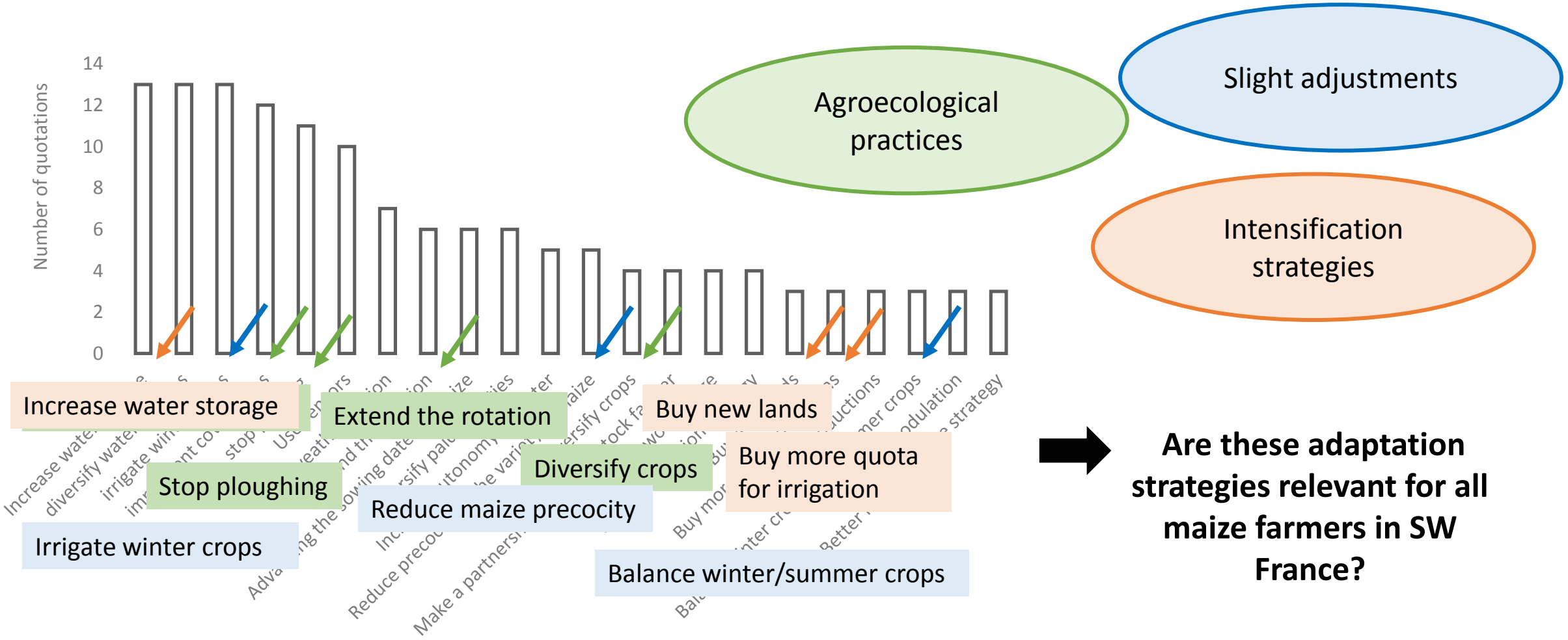
Method → Semi-structured interviews with expert farmers, a board representing components of the farm

Results → List of adaptation strategies

Farmers with awareness about climate change and agroecological practices



A diversity of adaptations



Are these adaptation strategies relevant for all maize farmers in SW France?

2. Quantitative approach

Objective

Farmers' appraisal of adaptation strategies

Factors influencing farmers' appraisal of adaptation strategies

Resistance to change; Interest for agroecology; Perception of climate change risks; Risk-aversion; Attachement to production system; Assistance; Reactivity

Statistical analysis

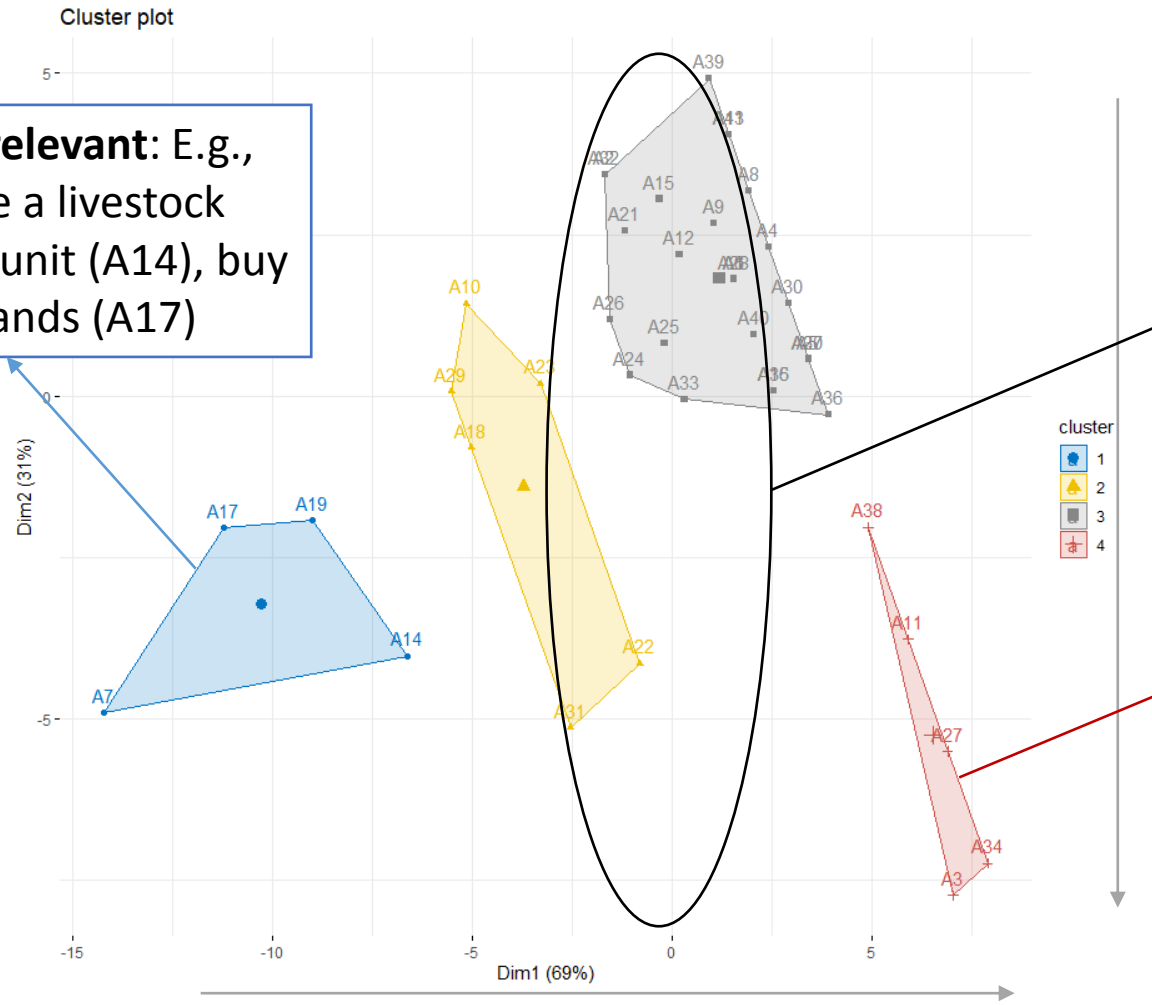
Factor analysis and hierarchical clustering

Regression trees and logistic regressions

Classification of farmers according their appraisal of adaptation criteria

Farmers' viewpoint differs regarding adaptations

Mostly irrelevant: E.g., integrate a livestock production unit (A14), buy news lands (A17)



Poorly quoted

Total number of quotations

Highly quoted

High heterogeneity in appraisal: E.g., stop ploughing (A22), build or enlarge a lake (A31)

Mostly relevant: E.g., use sensors (A38), restitute harvest residues (A27)

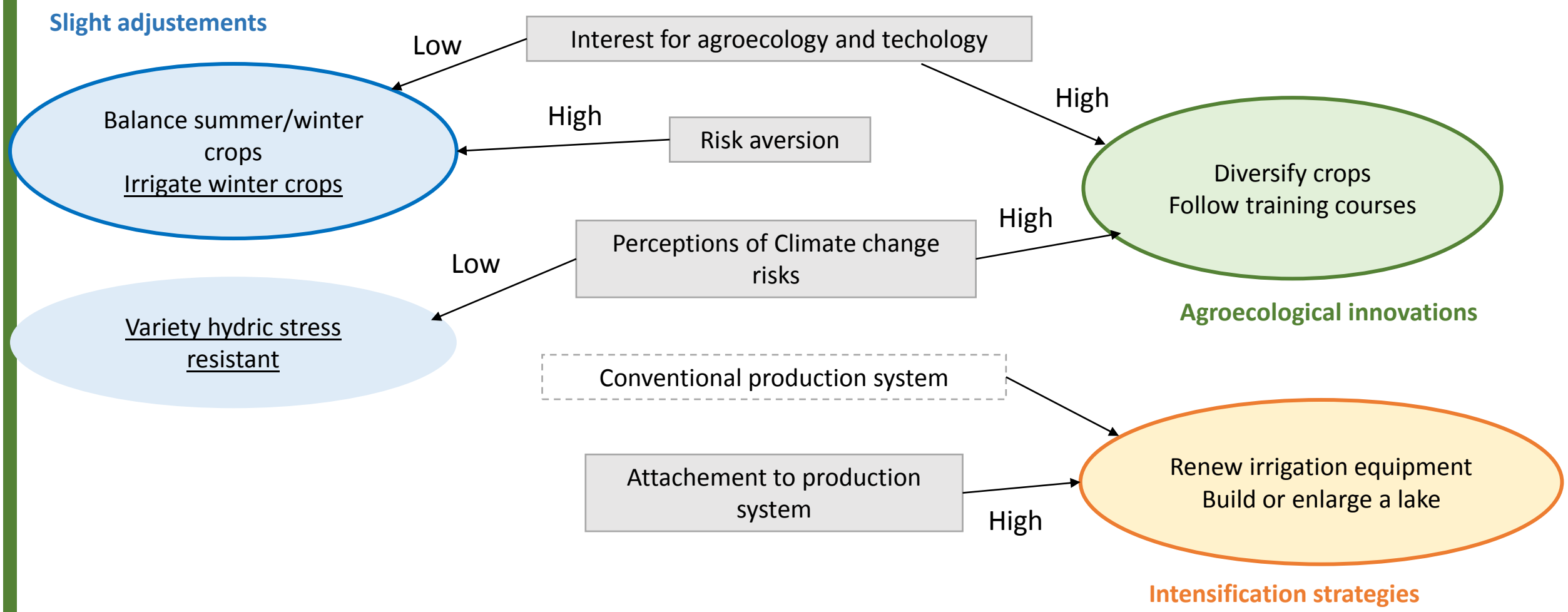
What factors influence farmers' appraisal of adaptation strategies ?

Quoted irrelevant

Level of relevance

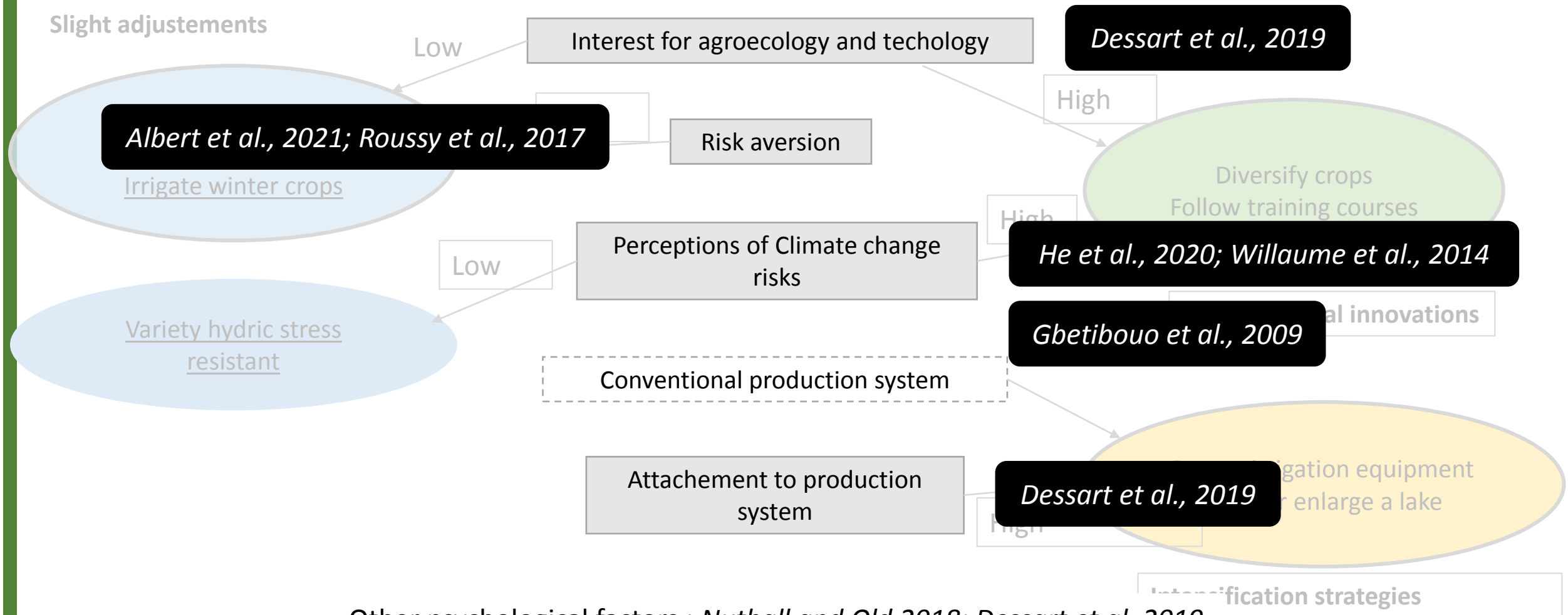
Quoted relevant

Psychological factors explain farmers' appraisal



Results from regressions *Results from clustering*

Psychological factors influence adaptation



Other psychological factors : *Nuthall and Old 2018; Dessart et al. 2019*

Implication for science and society

Choice of adaptation strategies is driven by farmer's psychological profile

Farmers' viewpoint differs regarding relevance of adaptations because of their psychological factors

The need to rethink advising and support strategies for farmers → more individual advising

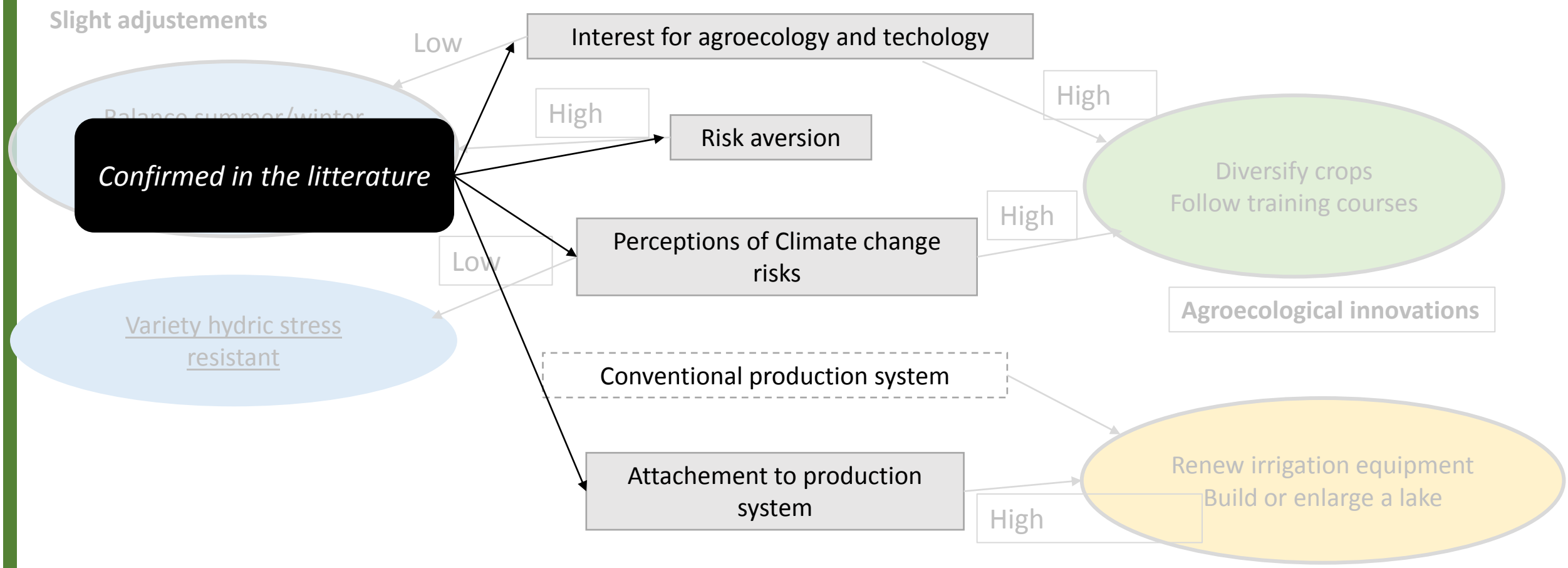
Adoption of agroecological practices is influenced by interest for agroecology and perceptions of climate change risks

Public policies and agricultural advising could enhance agroecology through specific awareness and training campaigns

Thank you for your attention

Thanks to Pierre Busson who participated actively in this study as a trainee

Psychological factors influence adaptation



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