

Climate adaptation for food security

Webinar in the series “The impact of agriculture on climate change and vice versa” jointly organised by WIMEK WUR (NL) and Walailak University (Thailand).

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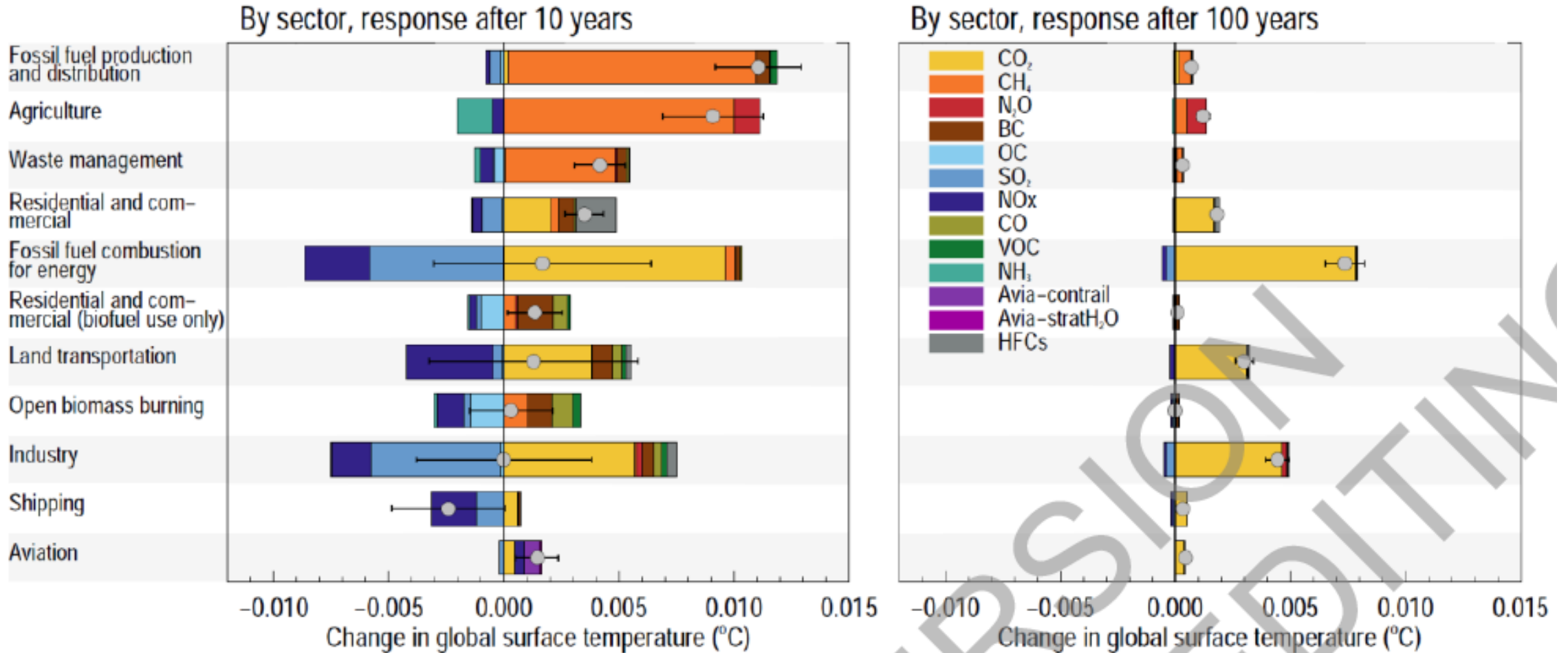
2a Overview of climate change impacts on food security

2b Example of local food security impacts on coffee

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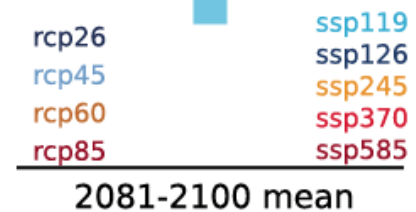
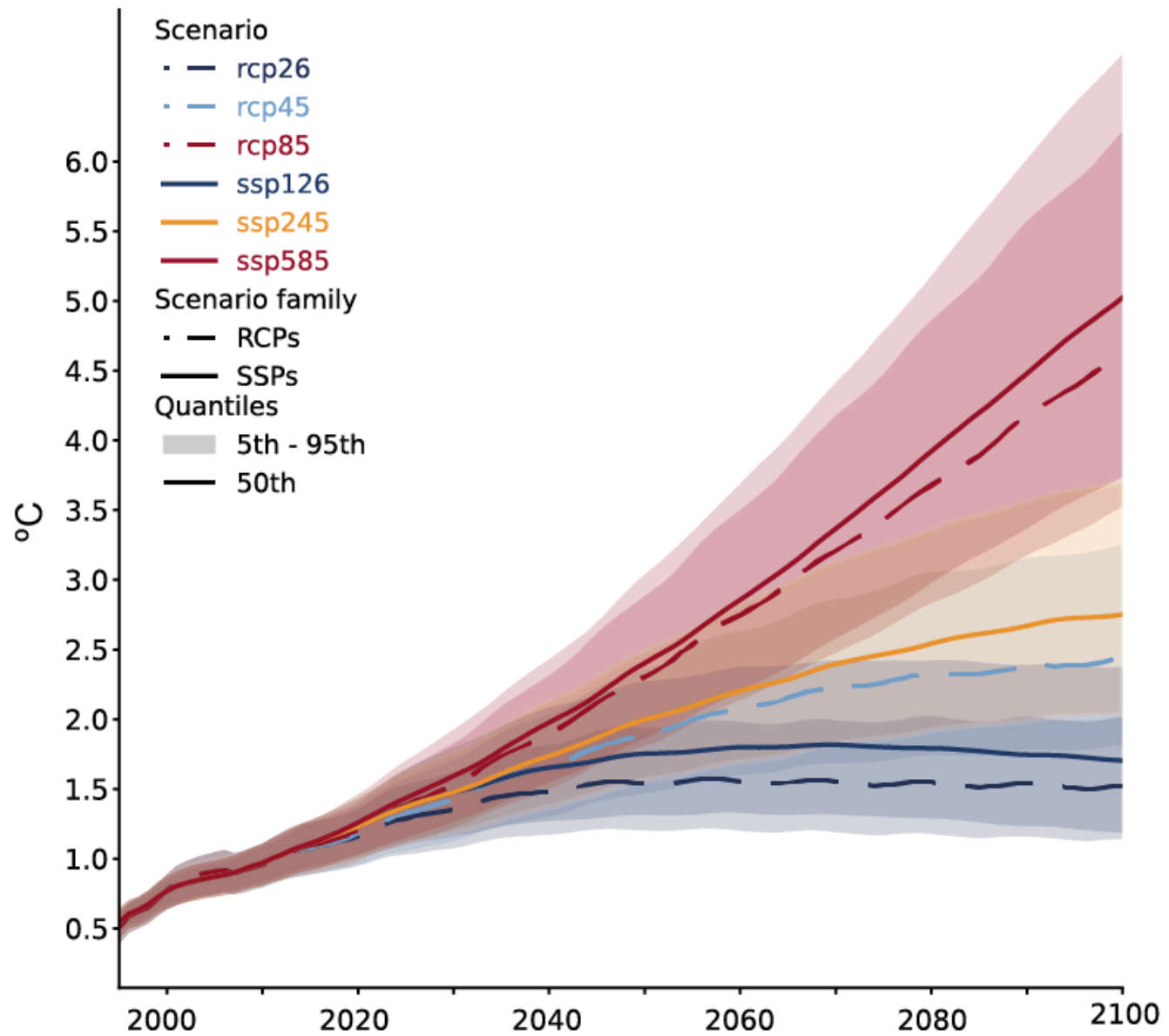
Part 1: Agriculture as a cause?

Agricultural GHG emissions do impact climate



Use and making of fertilizers; irrigated rice; livestock; land management (degradation, tillage); biomass burning; residue management

(b) Surface Air Temperature Change

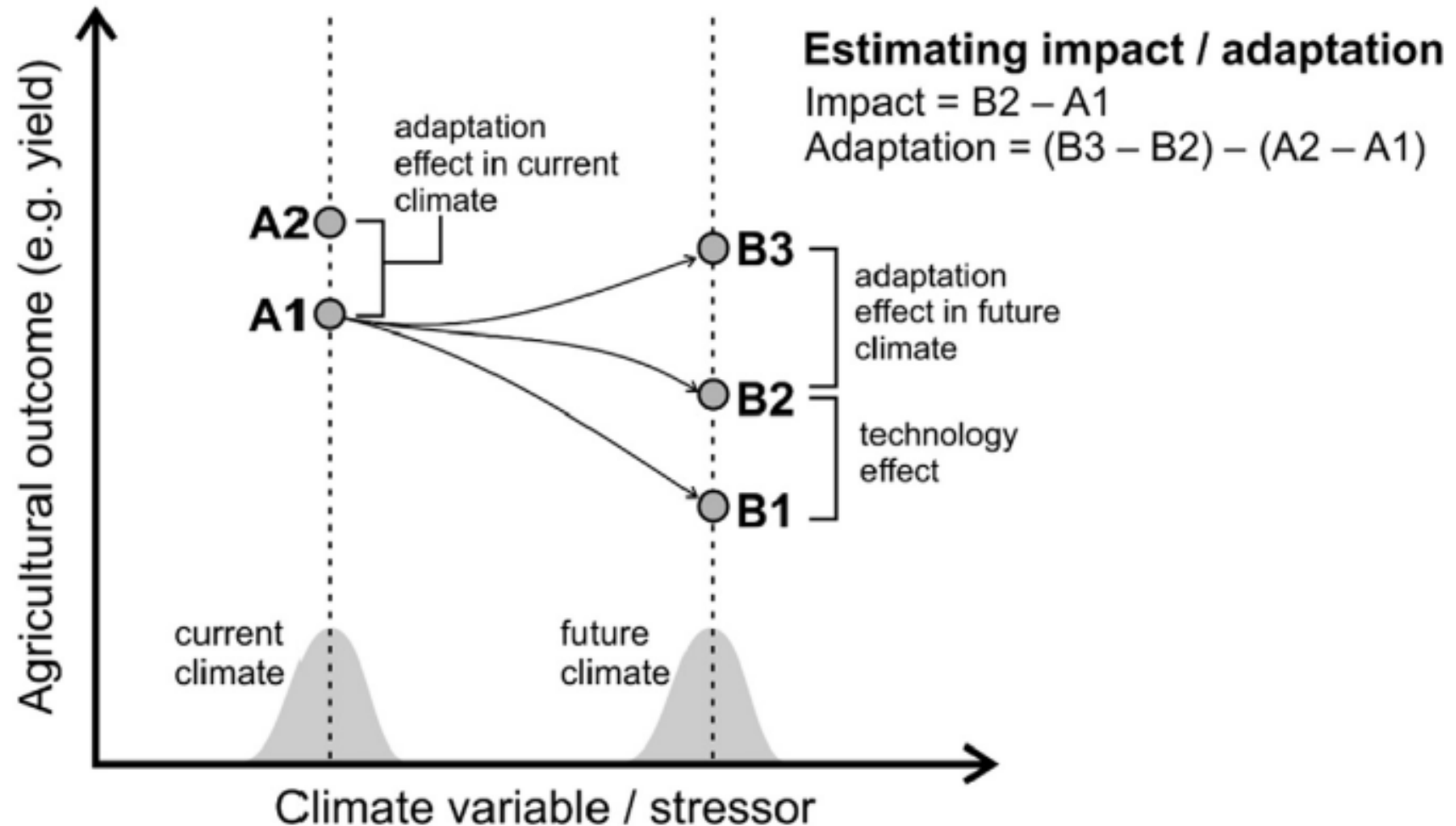


IPCC (2021)

Part 2: Agriculture as a 'victim'...

2a Overview of climate change impacts on food security

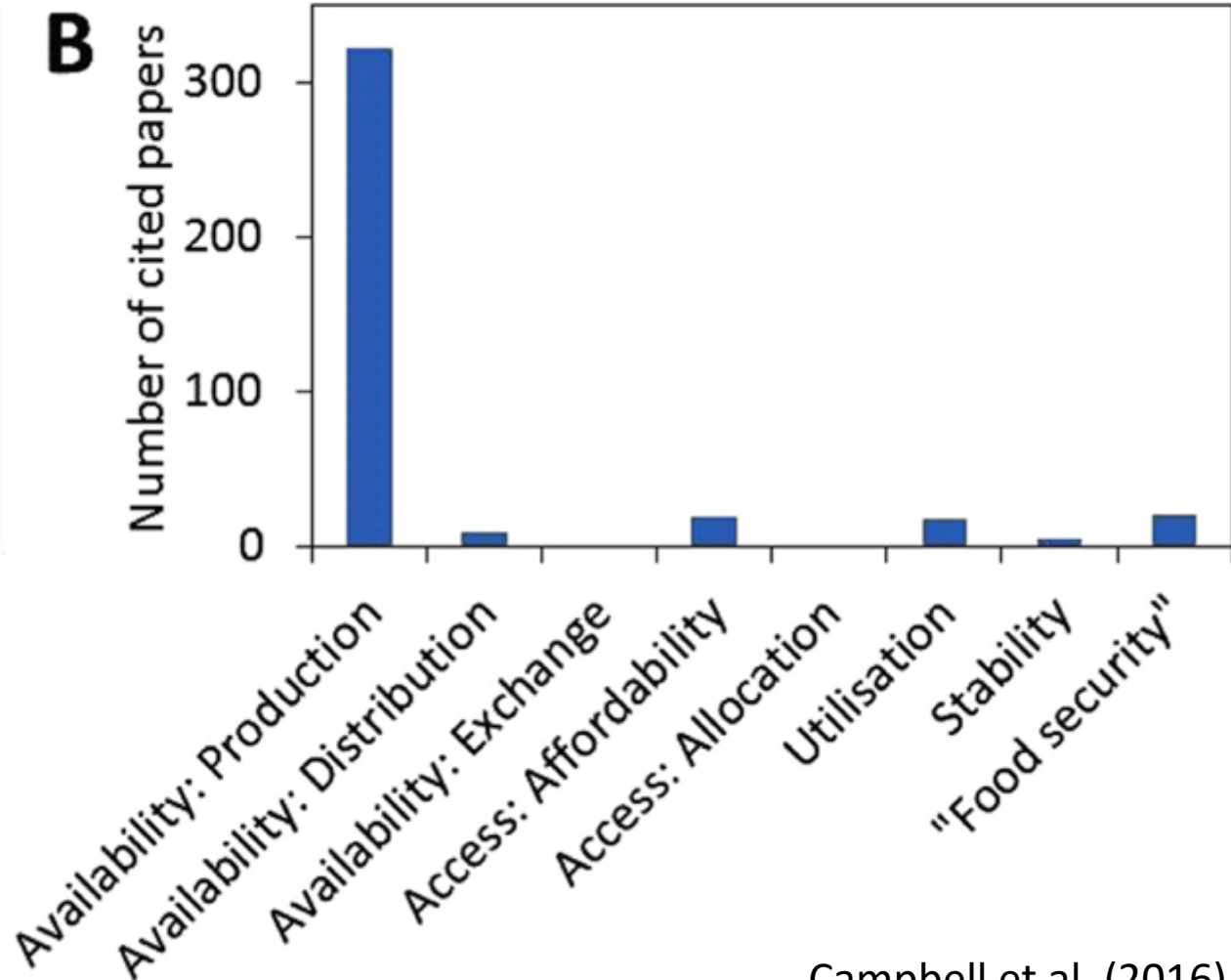
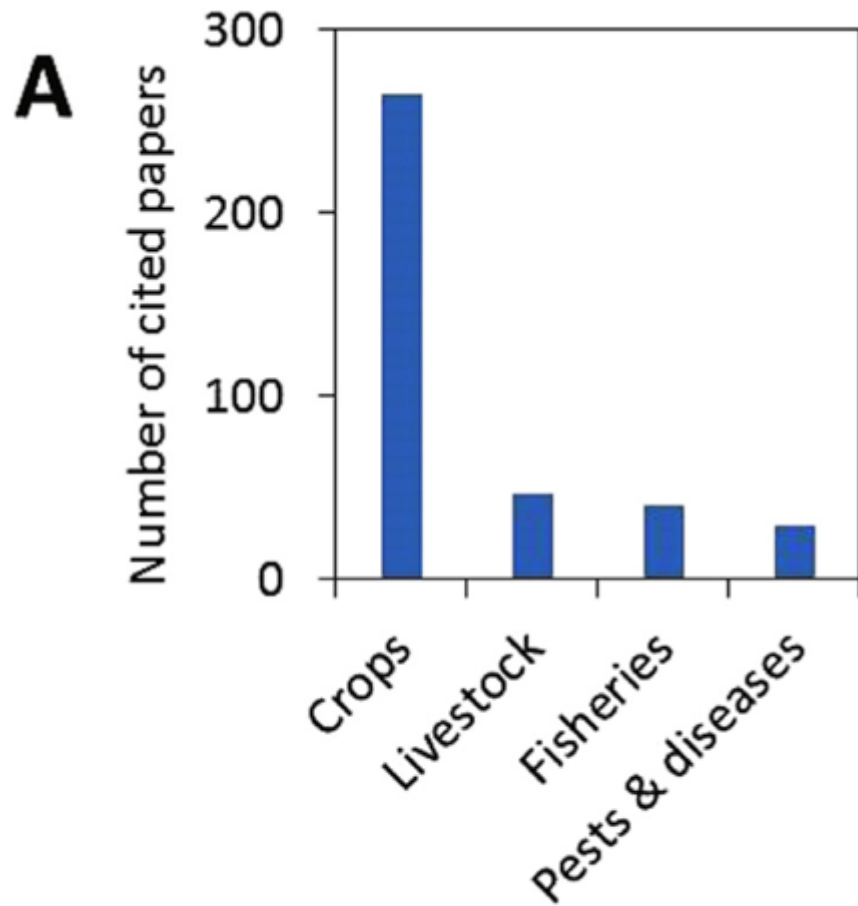
How do we estimate climate change impacts on food production?



The Food and Agriculture Organization of the United Nations (FAO) defines food security as

“A situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life.”

But our understanding of climate impacts on food security is very narrow...

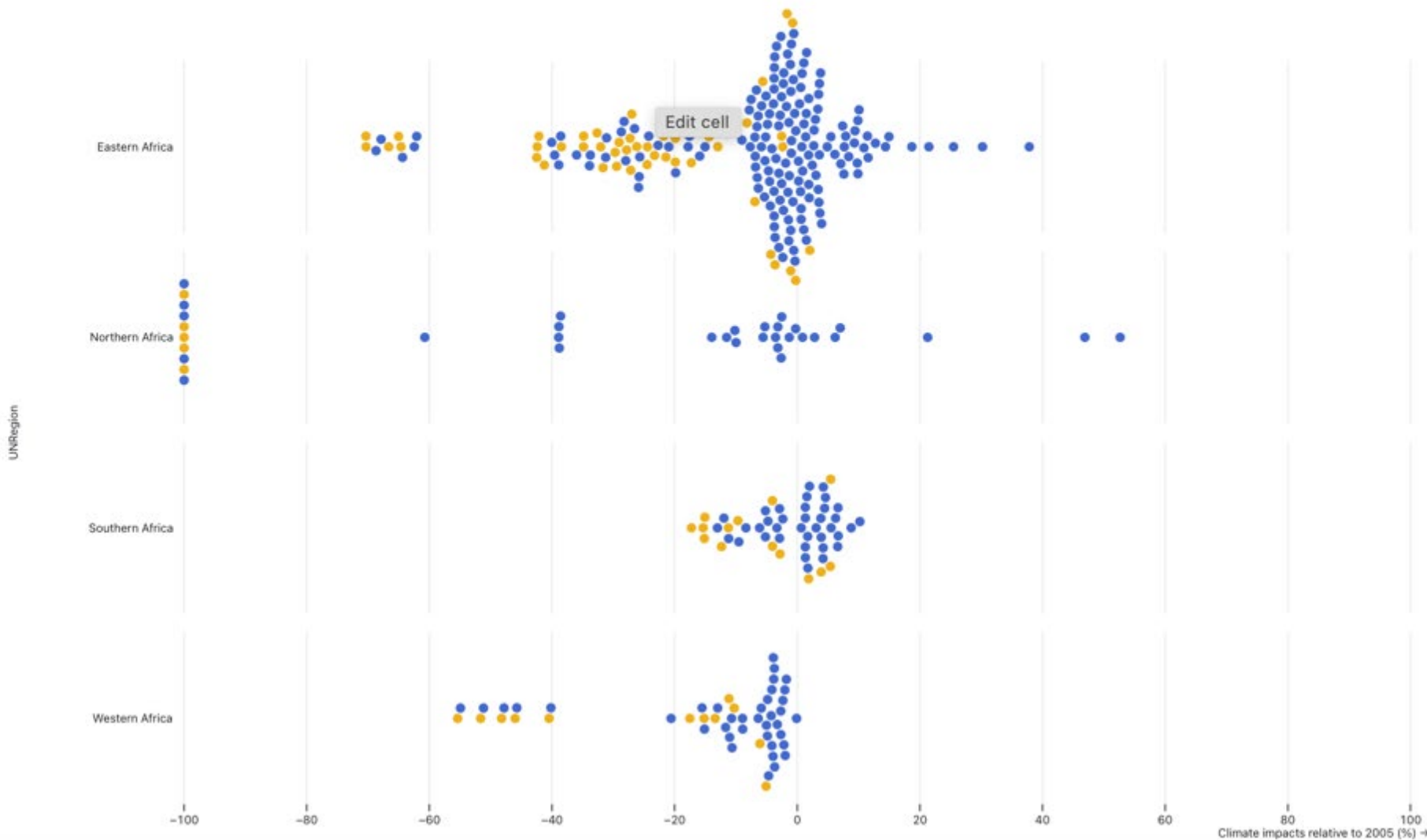


Maize Rice Wheat

WARMING LEVEL (°C): 1.5-2.0

ADAPTATION: All data

With adaptation Without adaptation



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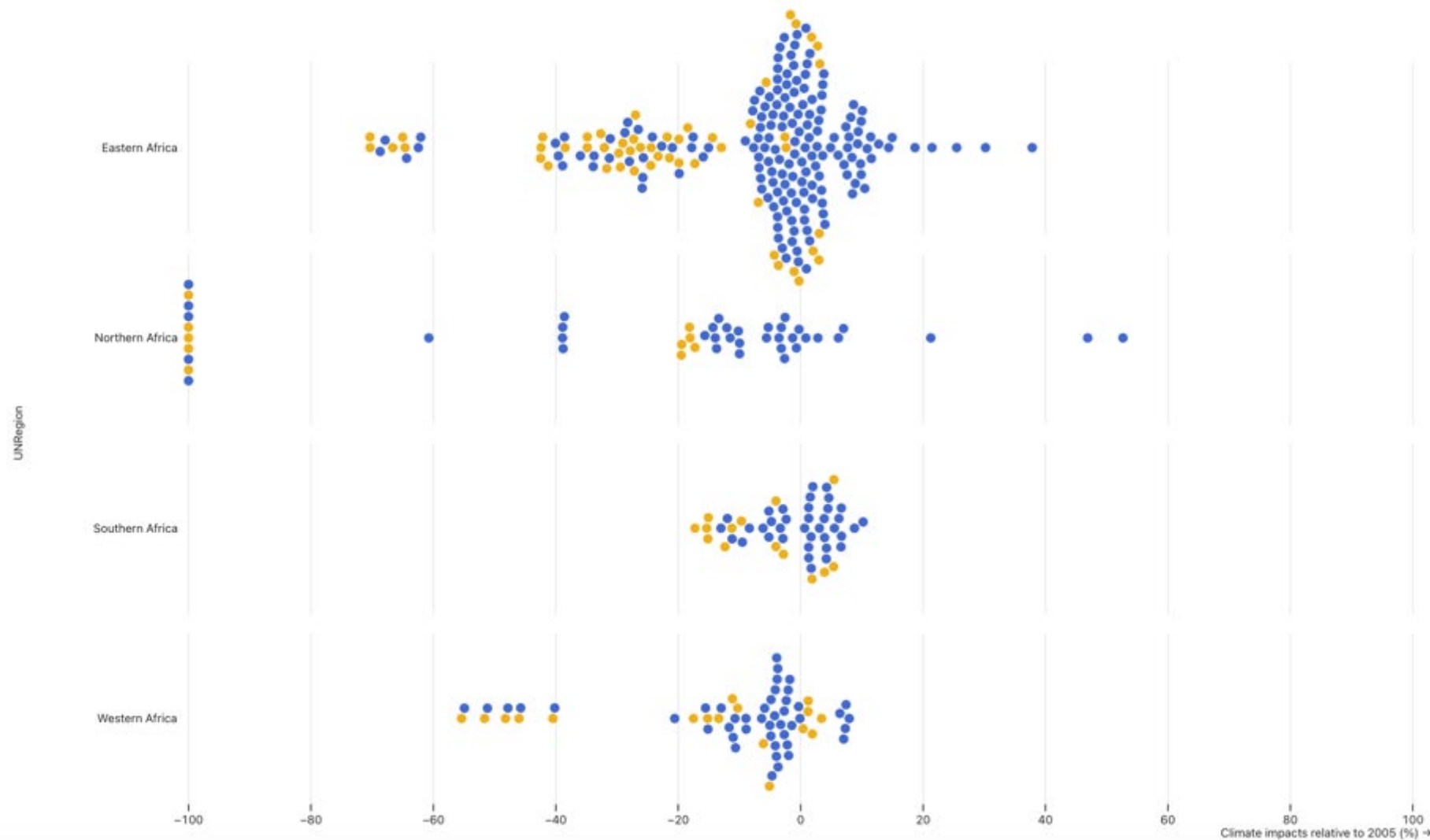


Maize Rice Wheat

1.5-2.0

All data

With adaptation Without adaptation



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CROPS

WARMING LEVEL (°C)

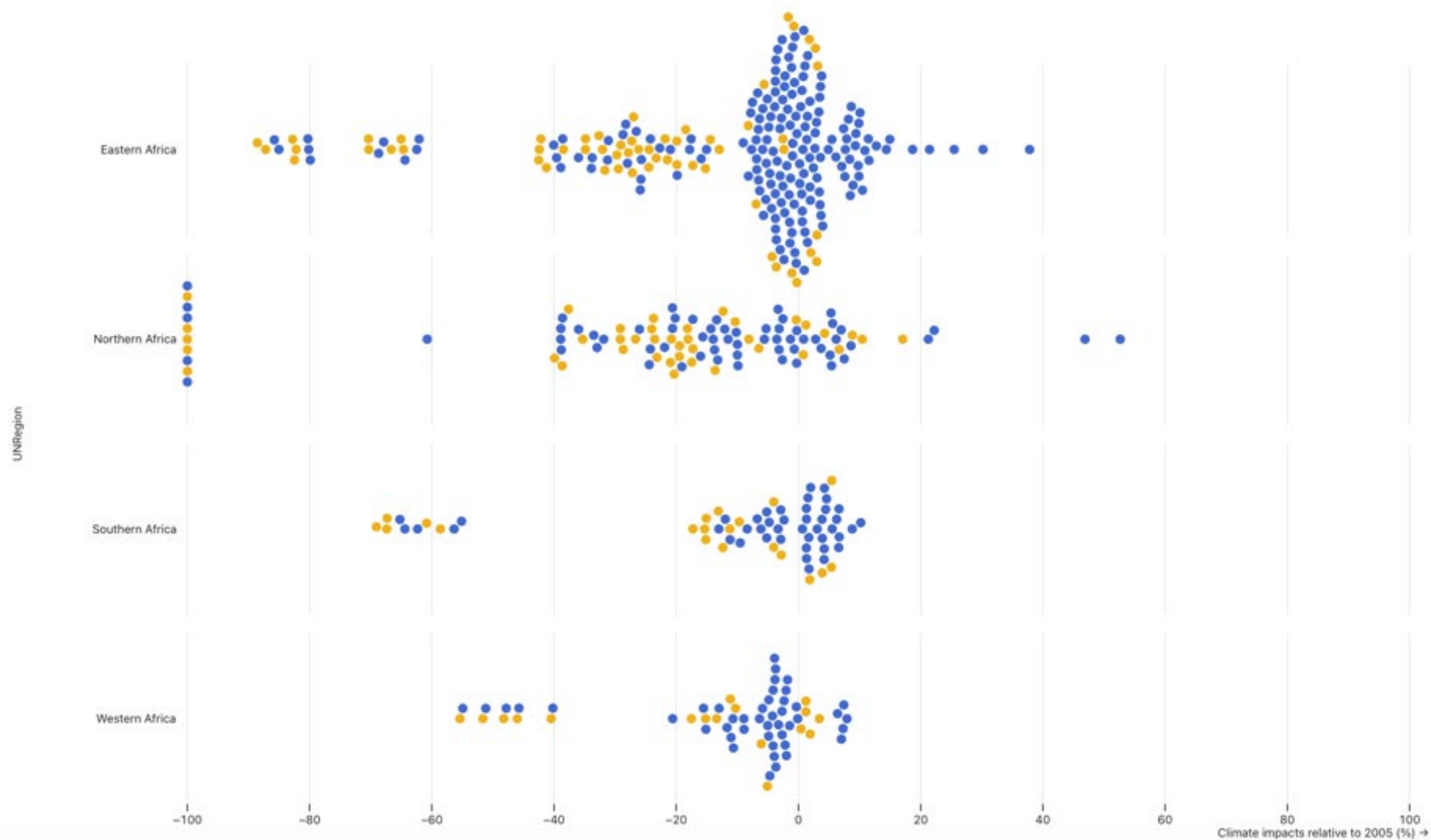
ADAPTATION

Maize Rice Wheat

1.5-2.0

All data

■ With adaptation ■ Without adaptation



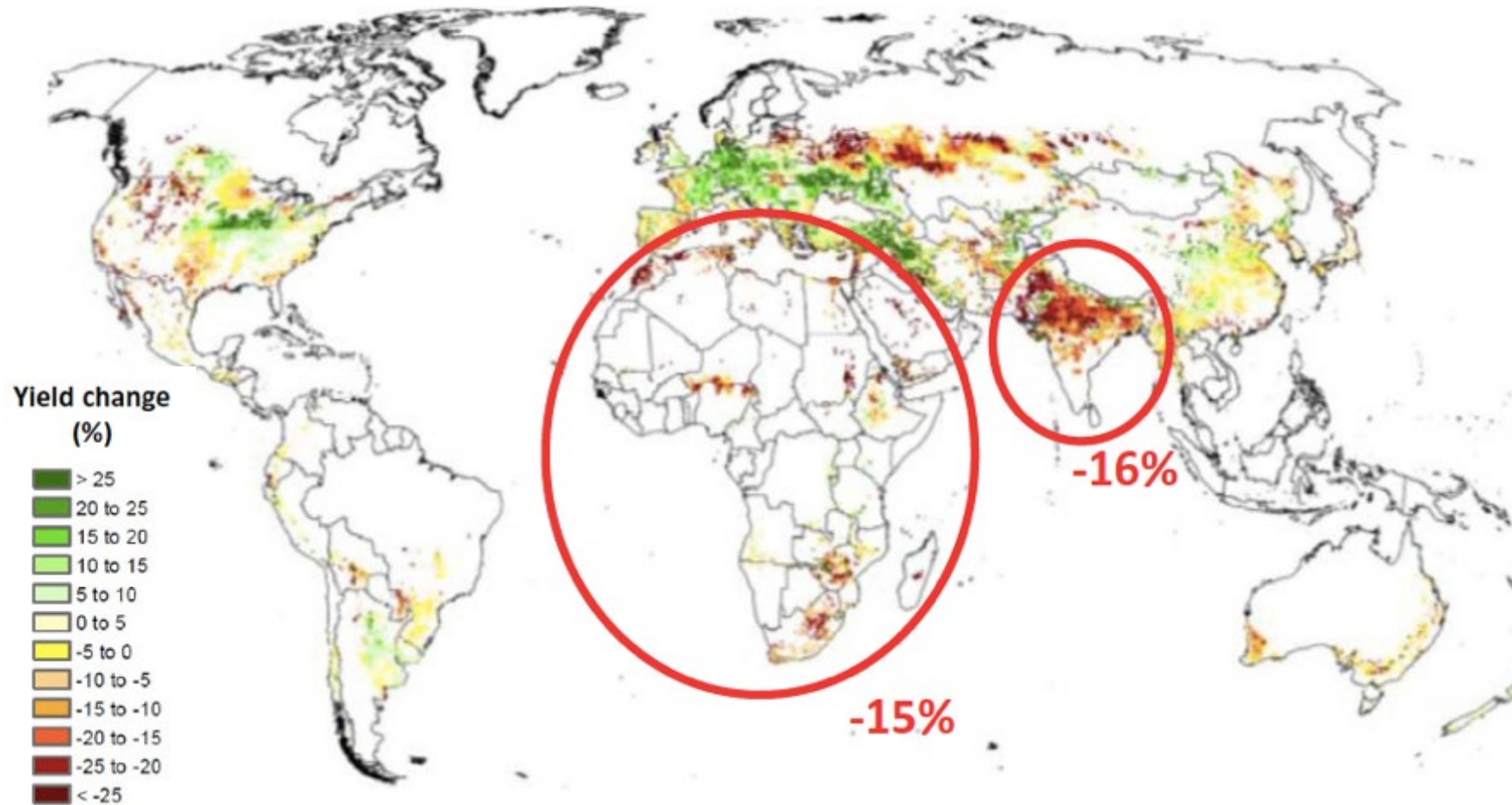
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CGIAR Adaptation Atlas

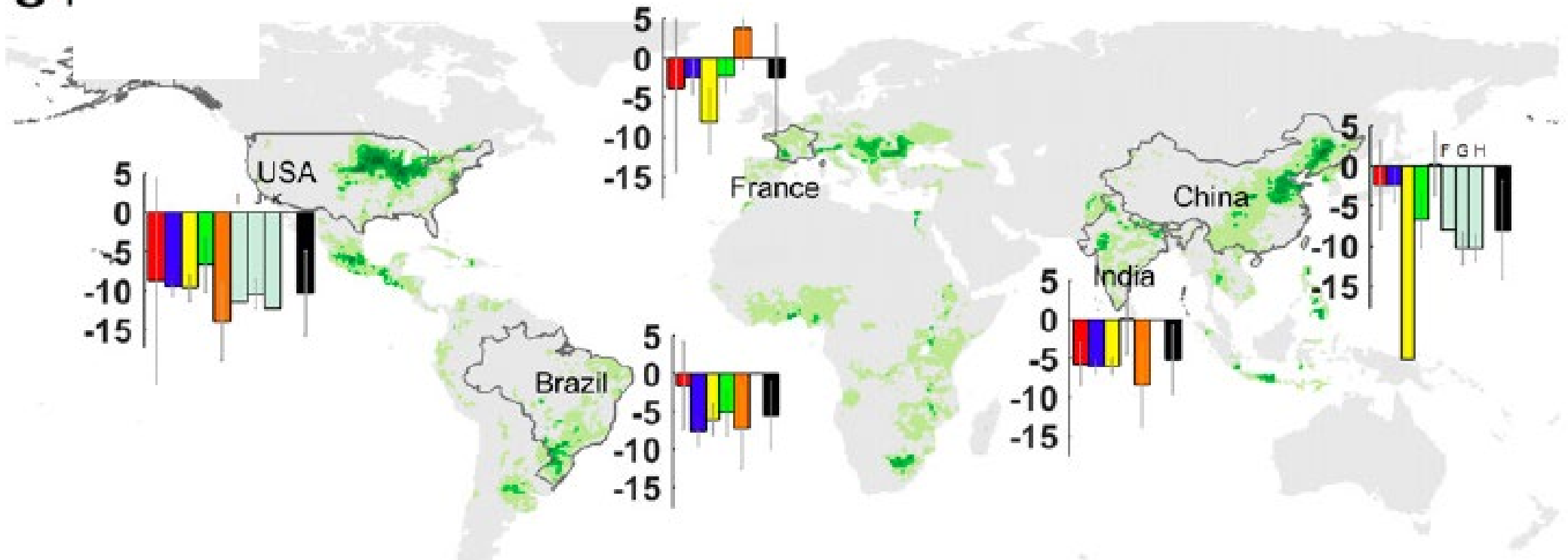
wheat

Climate change impacts RCP 8.5 (2050) ~ 2.5–3.5°C



maize

C Maize



-8 a -12 % per degree °C

Part 2: Agriculture as a 'victim'...

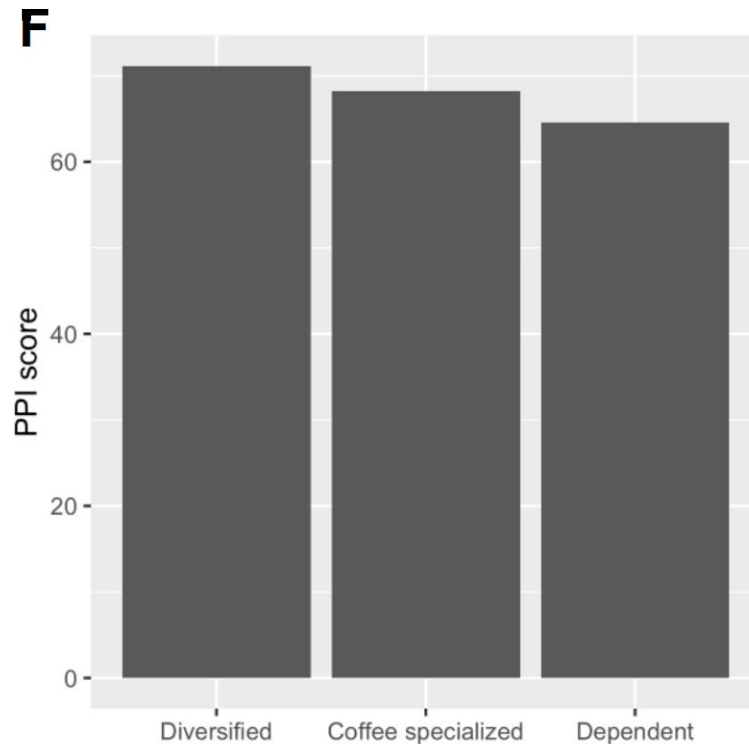
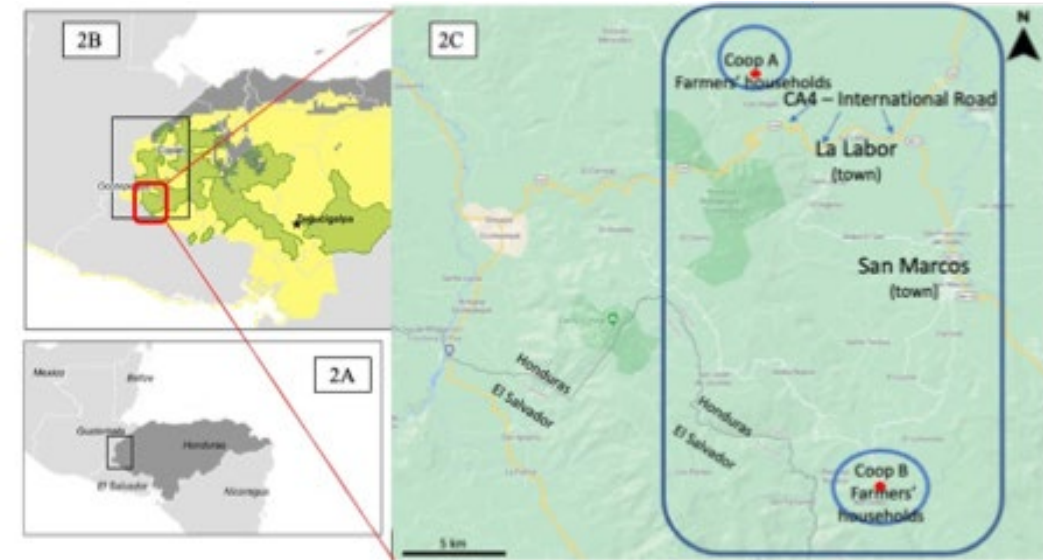
2b Example of local food security impacts on coffee

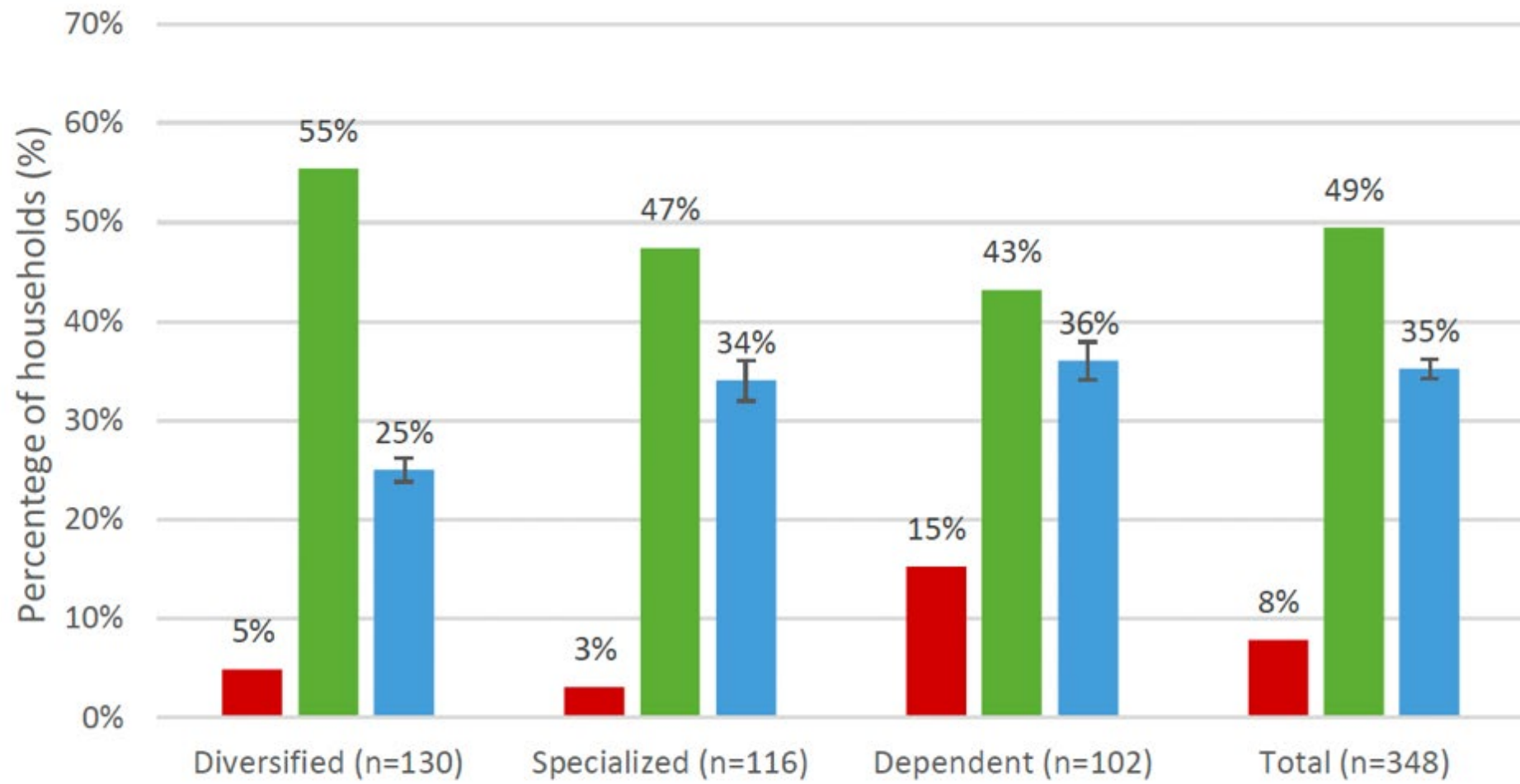


Coffee household livelihoods

Groups by coffee incomes

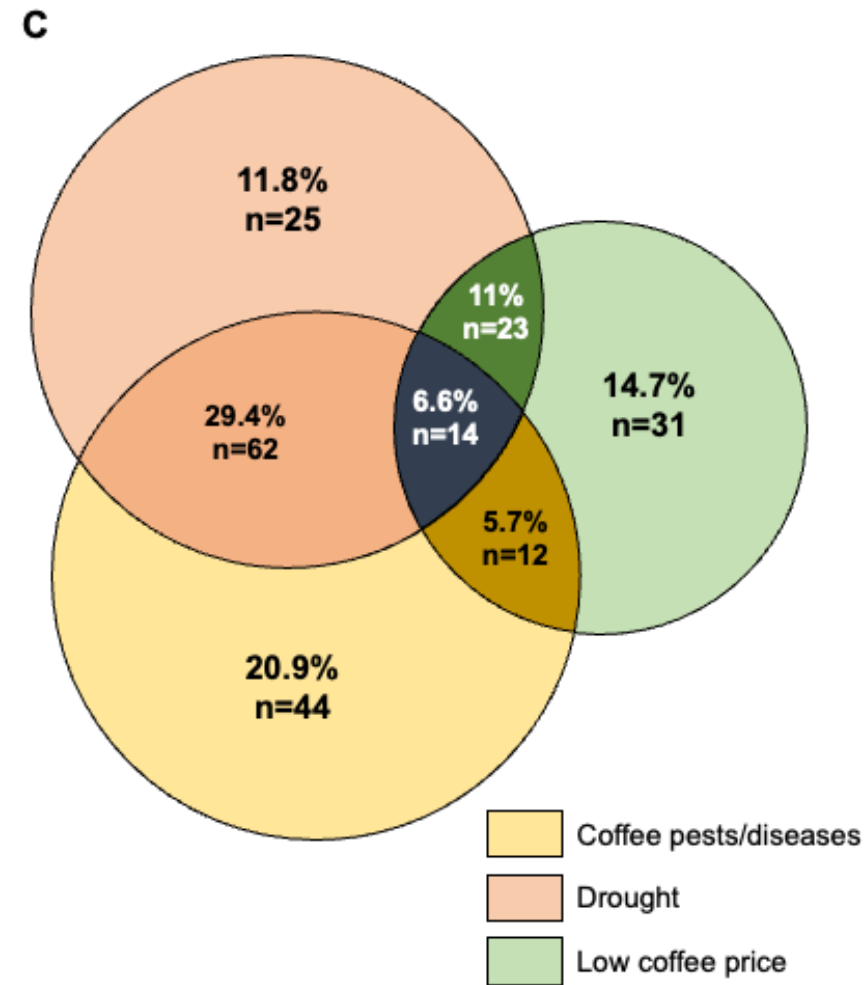
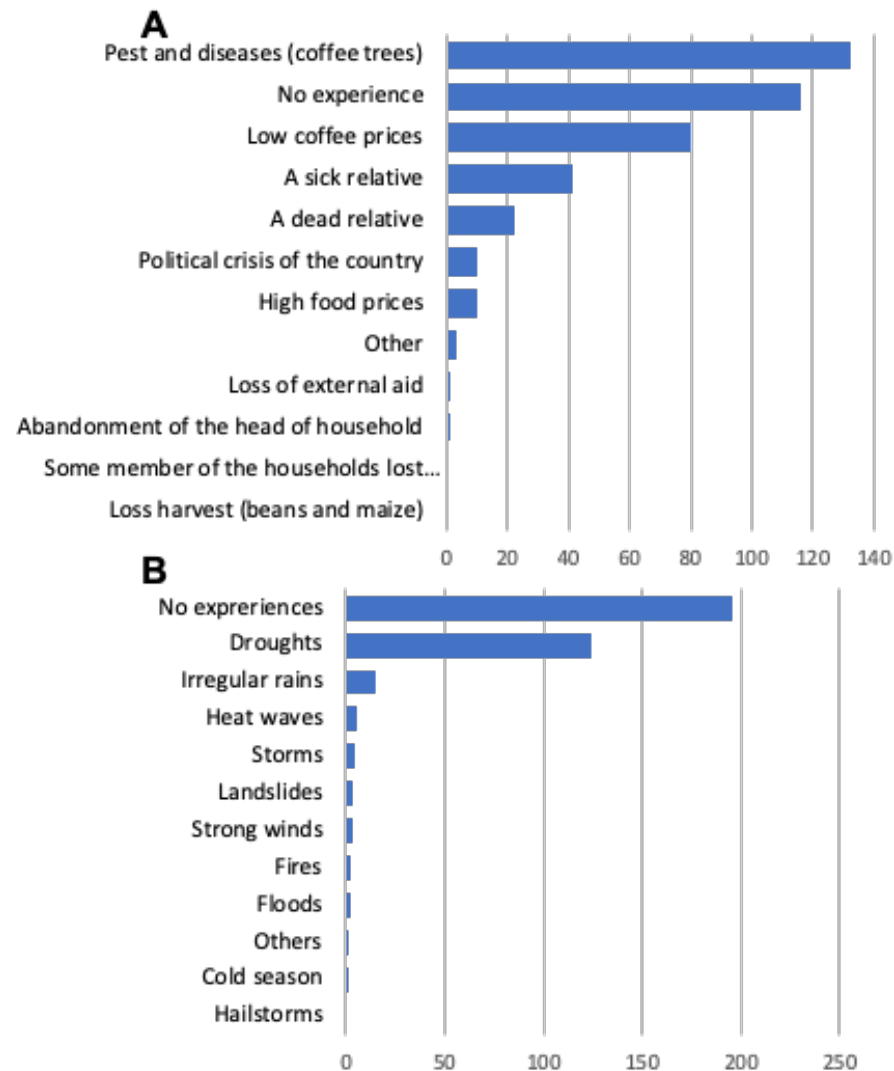
- > 75% = Dependent
 - >50 < 75% = Specialized
 - < 50% = Diversified
-
- The probability to be poor increases when households depend more on coffee income.
 - 24% of coffee households with a family member migrated. Why?
 - 66% looking for better incomes /conditions to live
 - 24% looking for higher incomes to pay debts
 - 7% of coffee HH had a family member considering migration in 2019.

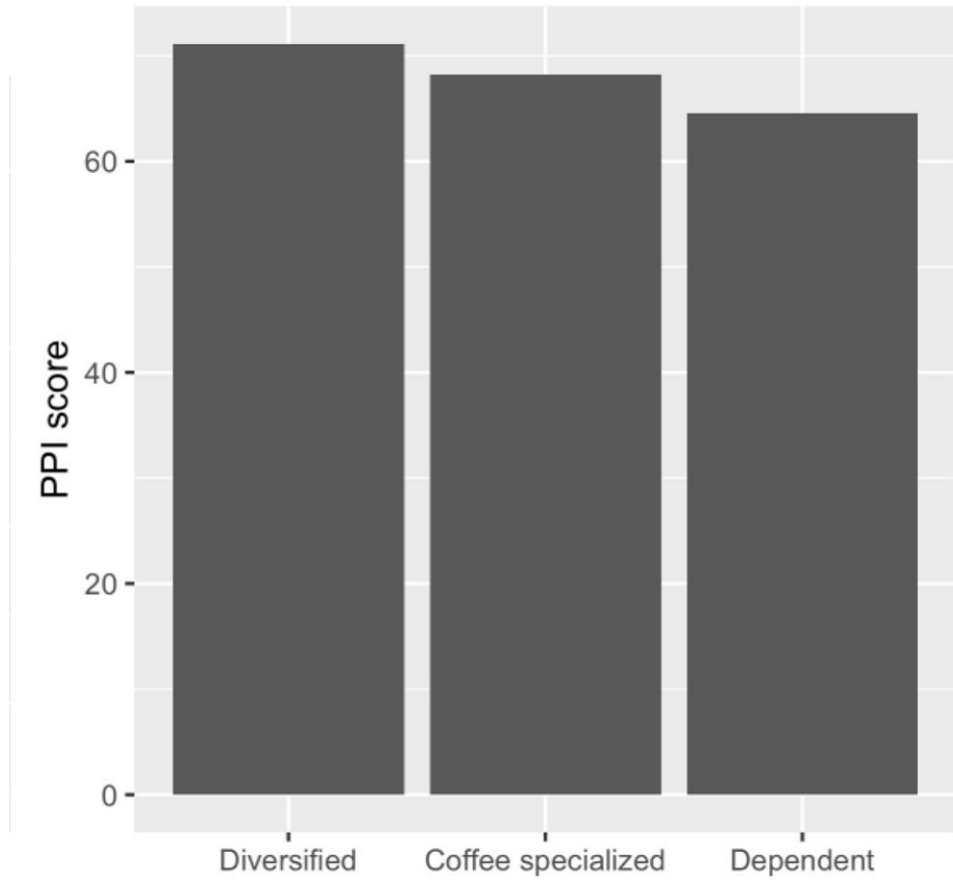




■ Prevalence of food insecurity (moderate + severe) ■ Food security ■ Poverty - PPI

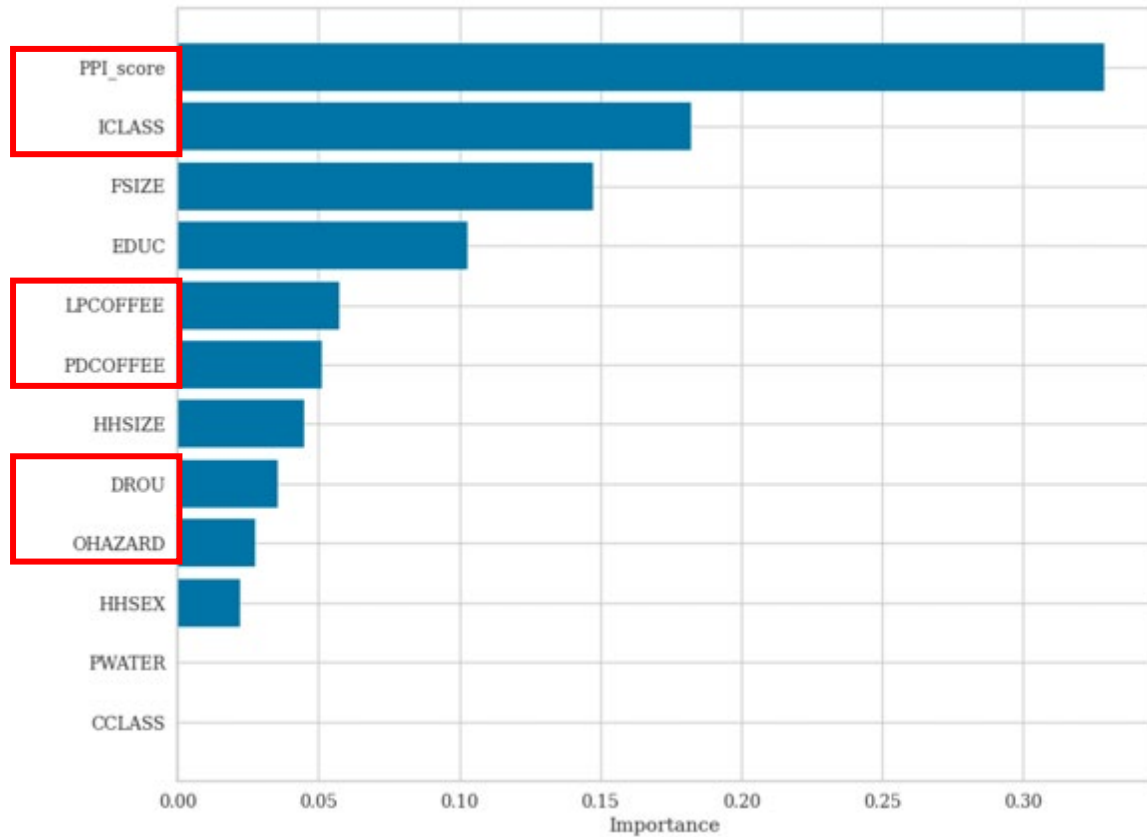
Coffee household exposure to climate hazards





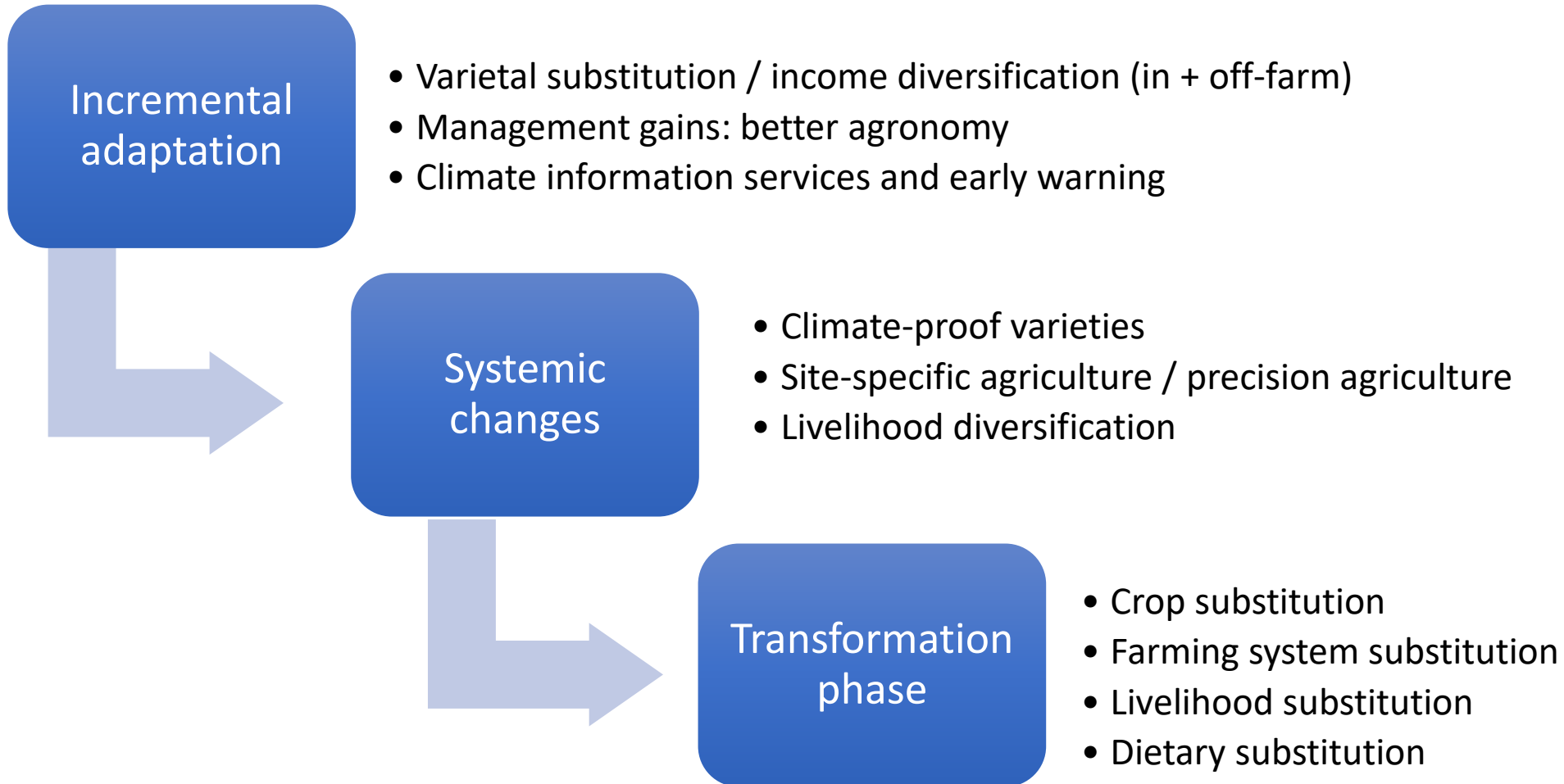
Who is more resilient?

Who is more food secure?



Part 2: Overview of solutions

How should we respond?



Model-based assessments



Maize

Experimental evidence from decades of field research

