

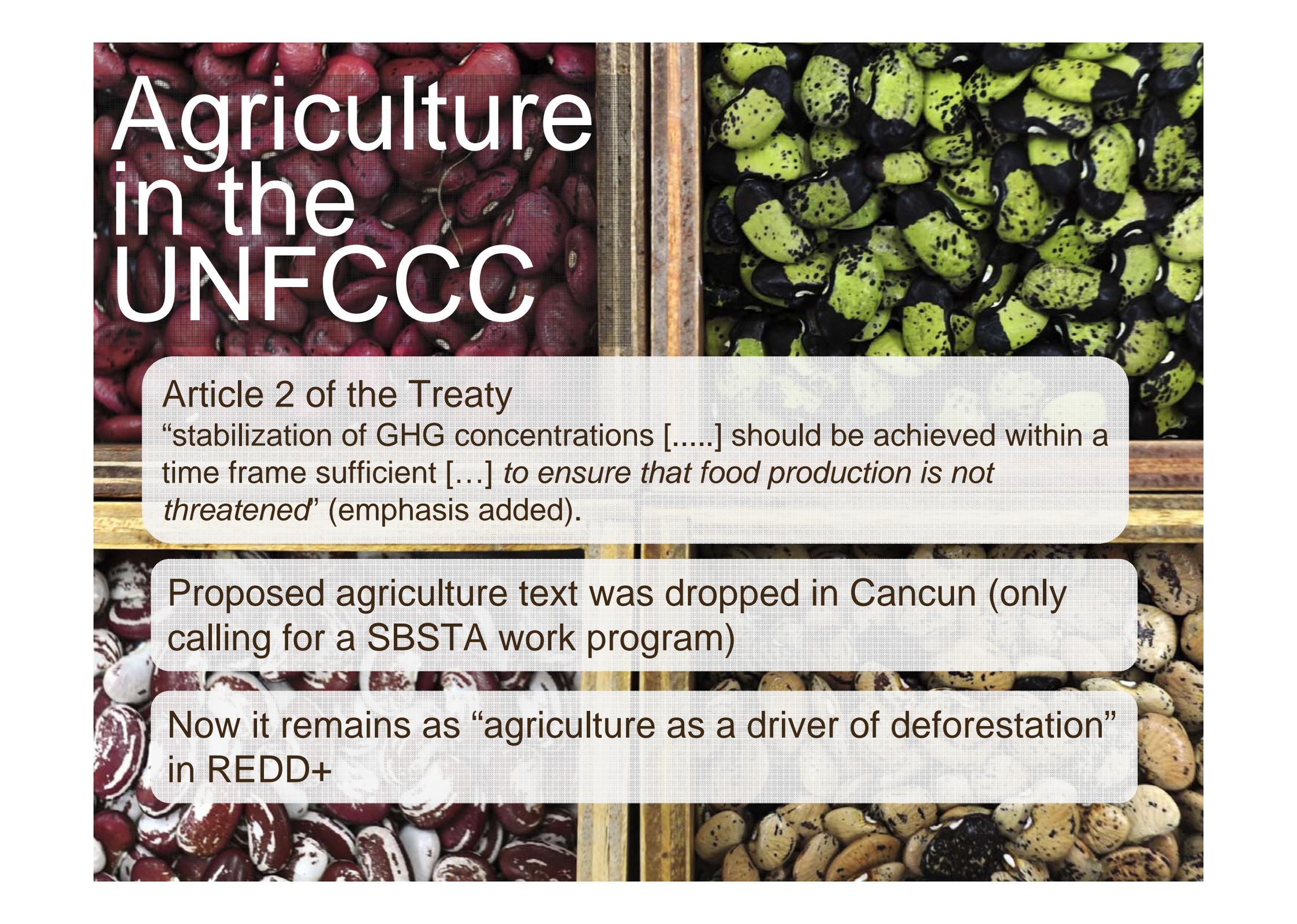


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## Impacts of climate change on farming and food security



Bruce Campbell  
Program Director

The background of the slide is a photograph of several wooden crates filled with different types of beans. The top left crate contains red beans, the top right crate contains green beans with black spots, and the bottom crates contain white beans with red and black spots. The text is overlaid on this image.

# Agriculture in the UNFCCC

## Article 2 of the Treaty

“stabilization of GHG concentrations [.....] should be achieved within a time frame sufficient [...] *to ensure that food production is not threatened*” (emphasis added).

Proposed agriculture text was dropped in Cancun (only calling for a SBSTA work program)

Now it remains as “agriculture as a driver of deforestation” in REDD+



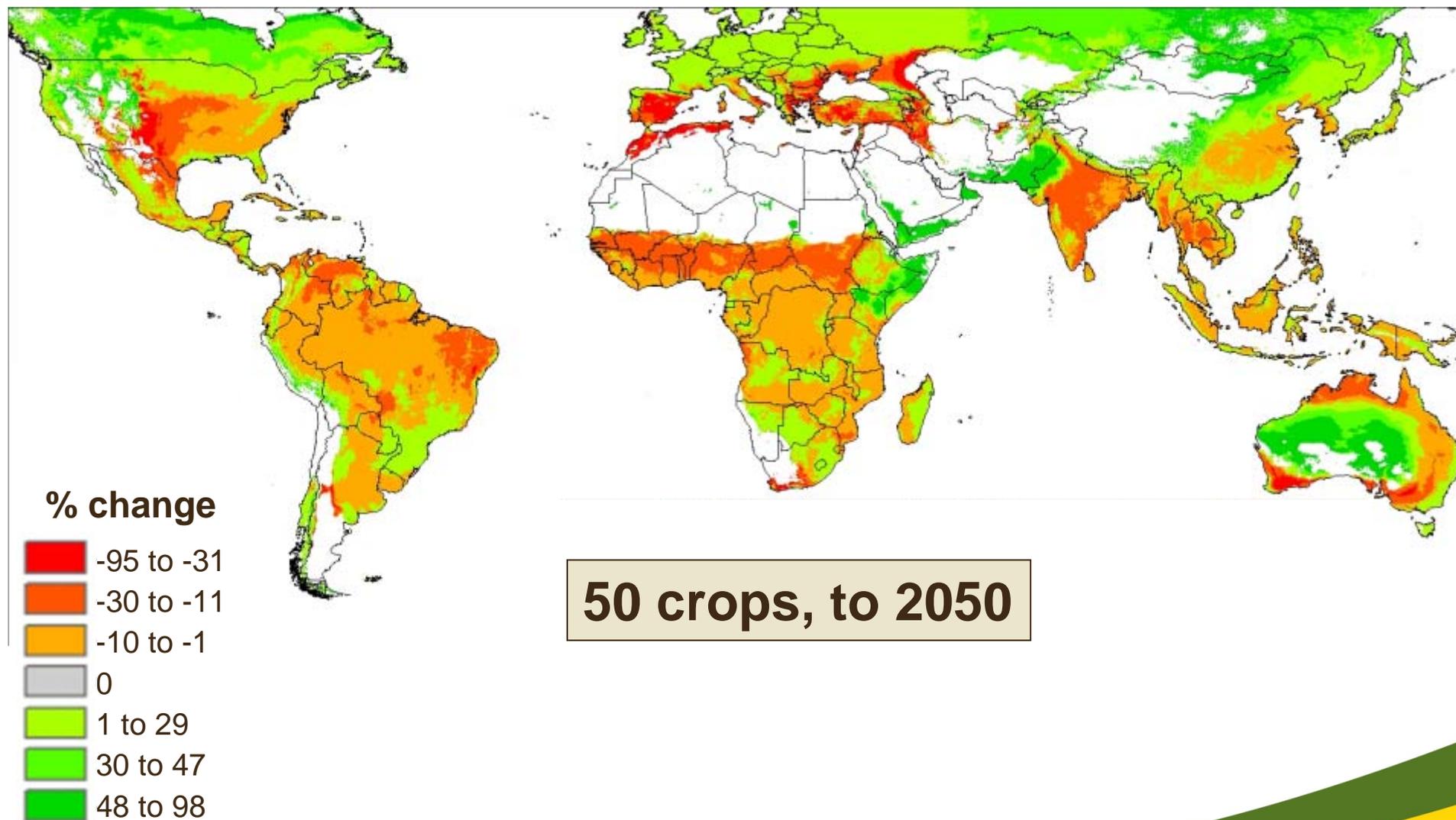
In order to meet global demands, we will need

**60-70%**  
**more food**  
by 2050.

# Long term impacts on production

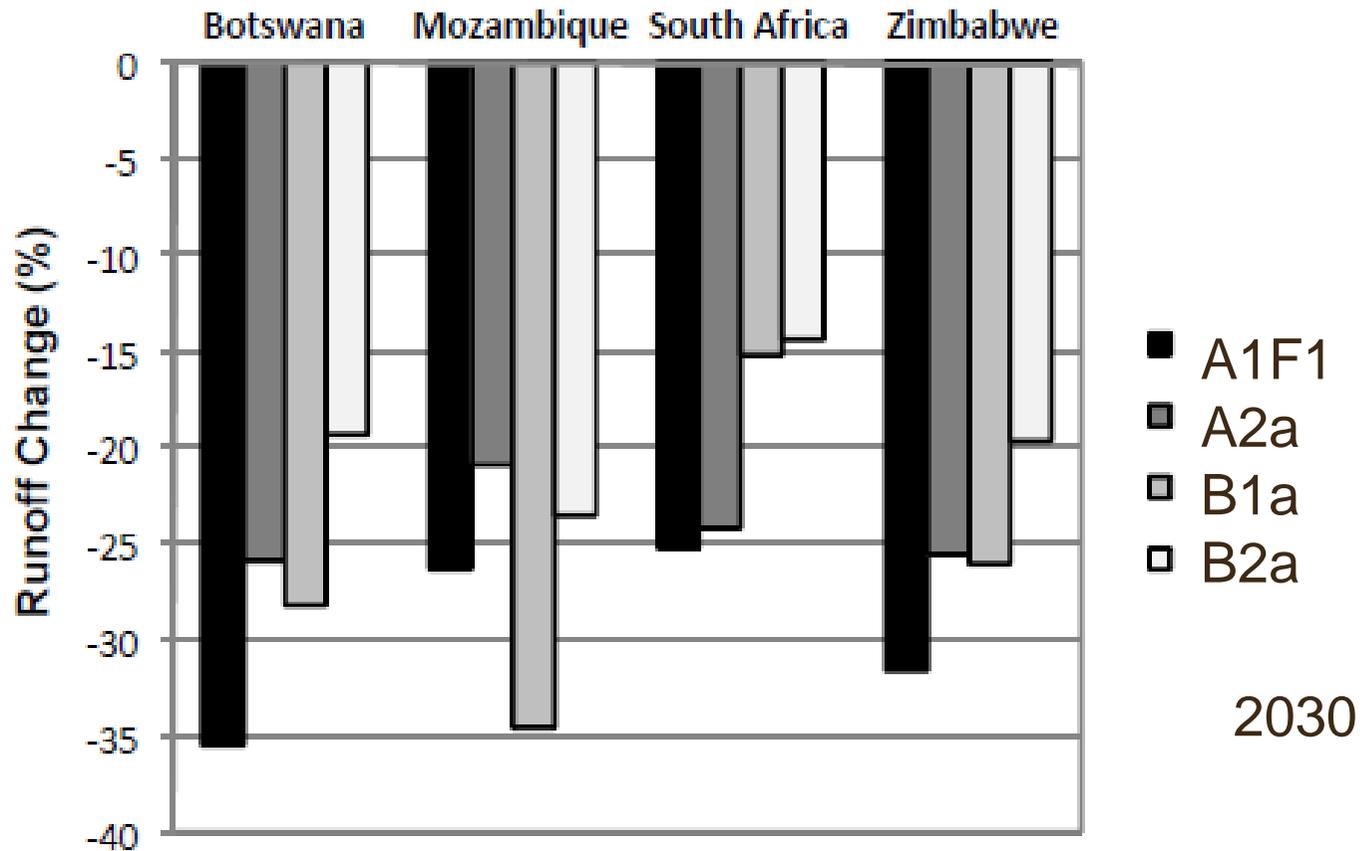


# Crop suitability will fall in many areas



*Andrew Jarvis, CIAT/CCAFS*

# Irrigation will be impacted

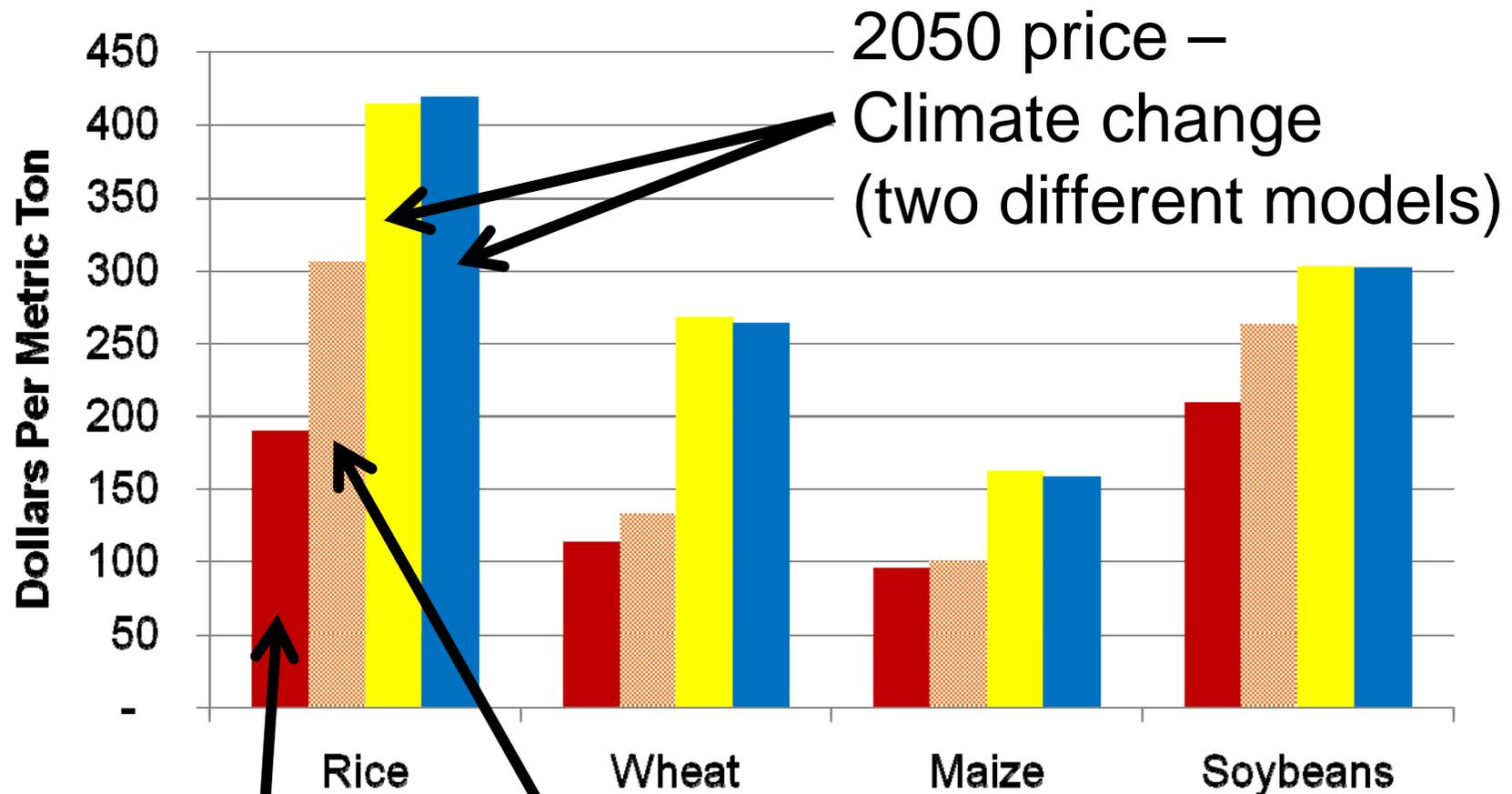


2030

# Impacts on prices and food security



# Food price rises



Current price

2050 price –  
No climate change



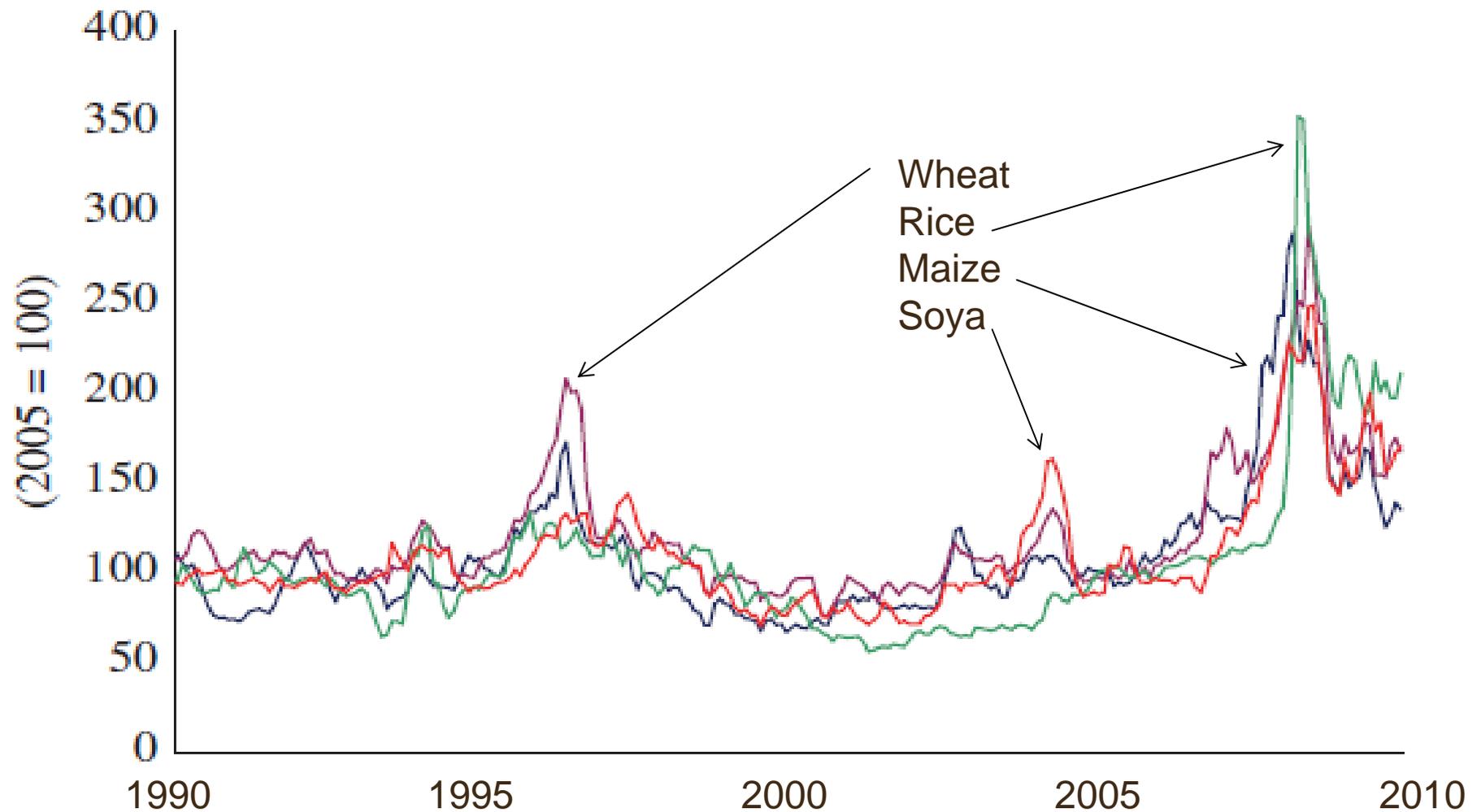
*“Unchecked climate change will result in a 20% increase in malnourished children by 2050,”*



*Gerald Nelson, IFPRI/CCAFS*

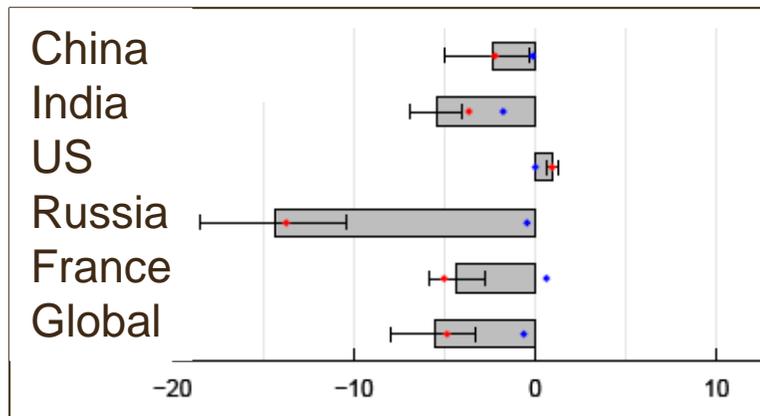
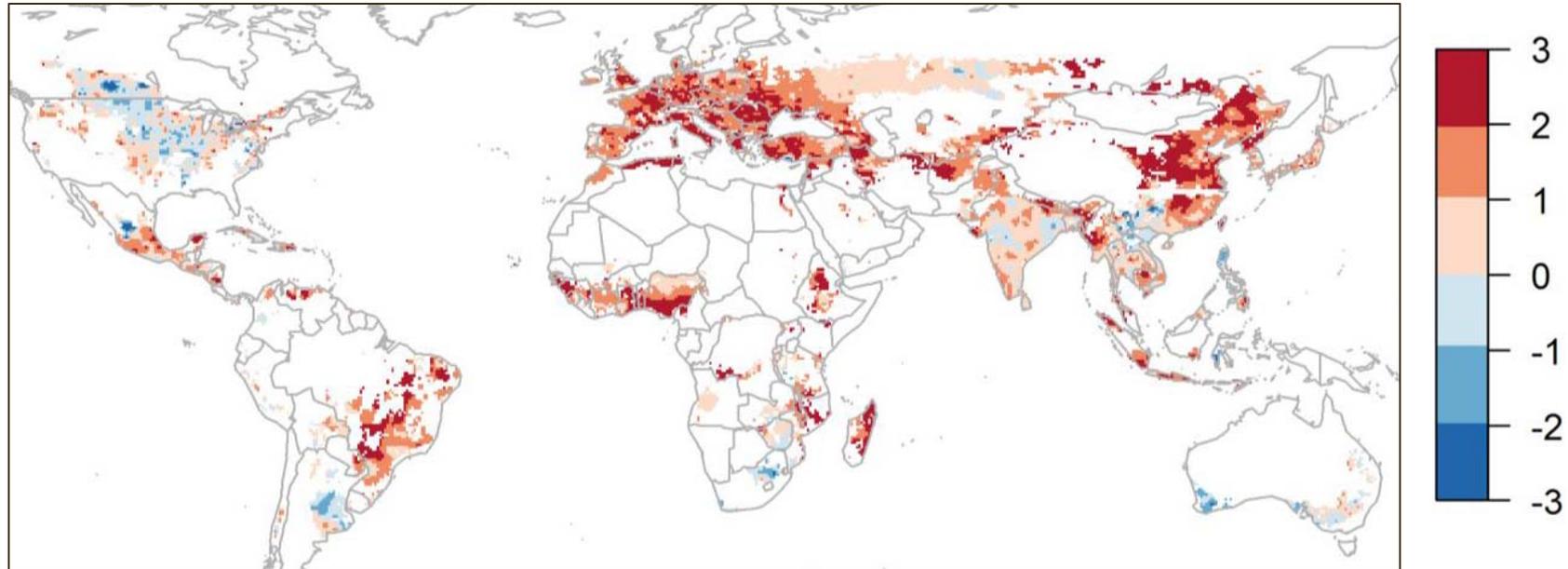
Impacts already measurable





- Many causes, climate not main driver but contributory
- Poor Australian wheat harvests in 2006 and 2007
- Poor European wheat harvest 2007

# Historical impacts on wheat



↑  
**Changes in growing season  
temperature, 1980-2008.**

*Lobell et al (2011)*

←  
**% Yield impact  
for wheat**

Farmer's are adapting..... Zai in Burkina





## Climate change adaptation will sometimes drive increases in emissions

- No rice planting before 15<sup>th</sup> June
- Harvest rice in October; reincorporate residues
- Plant wheat in November
- But high temperatures in March dictate an earlier planting time for wheat

- 2 million hectares now being burnt
- CO2 and haze



## Incremental Adjustments



## Transformative Adaptation

Costly, risky and complex

### Incremental:

- early harvesting
- manipulation of the crop canopy
- selection of drought-tolerant root stock
- use of water efficient technologies and practices

### Transformative

- Relocation of grape production or wineries to cooler regions
- Shifts to other crops
- Diversify into additional on and off-farm income-generating activities

*Parks et al CSIRO*



# Message 1:

## Recognise the multiple roles of agriculture

Food  
Security

Adaptation

Mitigation

Adap  
tatio  
n



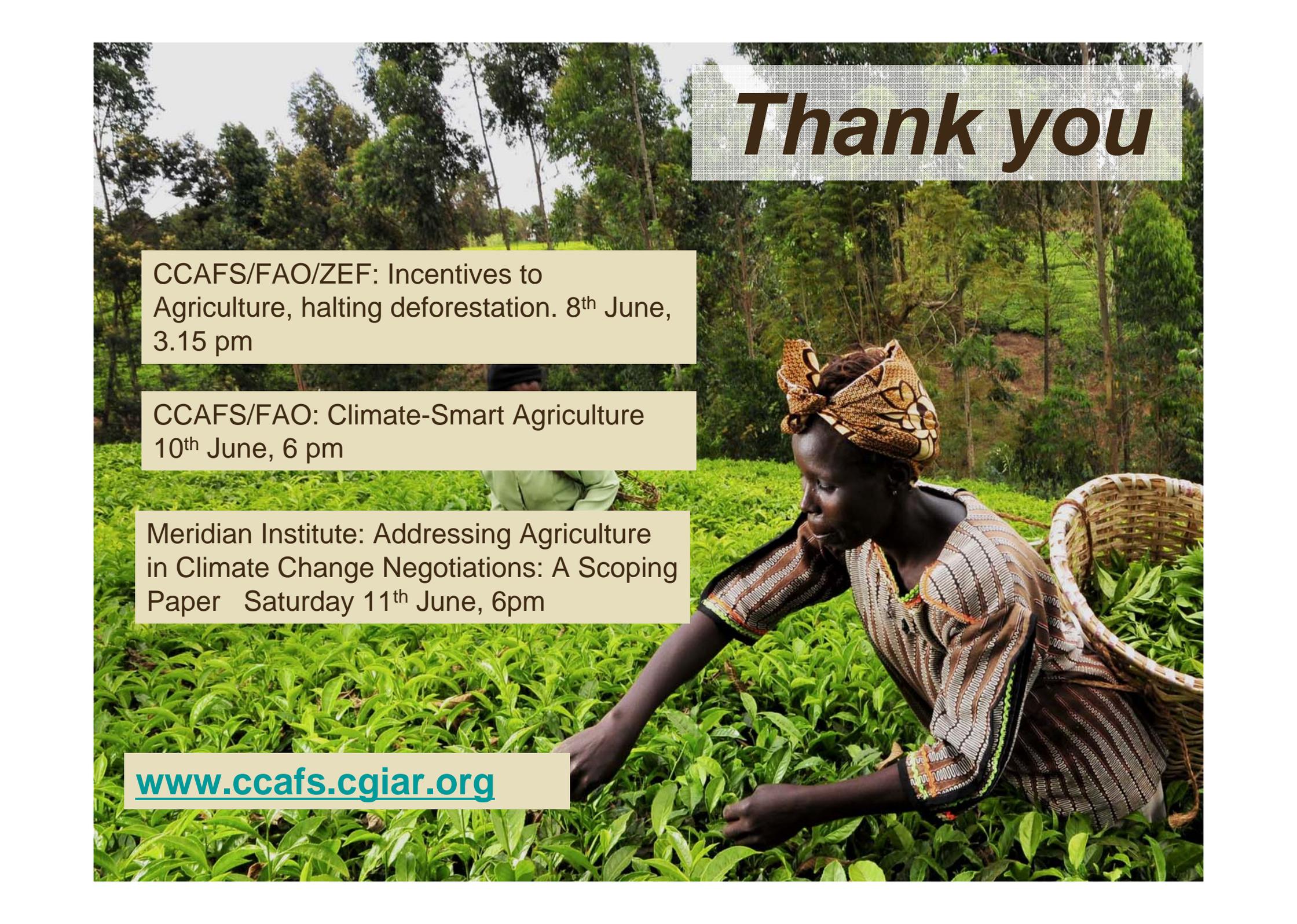
A woman wearing a blue headscarf and a blue shawl is looking towards the camera. She is standing next to a dark horse. In the background, there are other animals, possibly cows or buffaloes, in a rural setting. The text "Message 2: Get agriculture as a work program" is overlaid on the right side of the image.

**Message 2:**  
Get agriculture as a work  
program

## Message 3:

It is feasible to  
incentivize  
agriculture and  
reduce  
deforestation



A woman in traditional African attire, including a woven headband and a patterned shawl, is shown harvesting tea in a lush green field. She is leaning over the tea plants, and a large woven basket is visible behind her. The background is filled with tall trees and a clear sky.

# *Thank you*

CCAFS/FAO/ZEF: Incentives to Agriculture, halting deforestation. 8<sup>th</sup> June, 3.15 pm

CCAFS/FAO: Climate-Smart Agriculture 10<sup>th</sup> June, 6 pm

Meridian Institute: Addressing Agriculture in Climate Change Negotiations: A Scoping Paper Saturday 11<sup>th</sup> June, 6pm

[www.ccafs.cgiar.org](http://www.ccafs.cgiar.org)