



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, the bottom left crate contains red and white speckled beans, and the bottom right crate contains light-colored beans with 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+



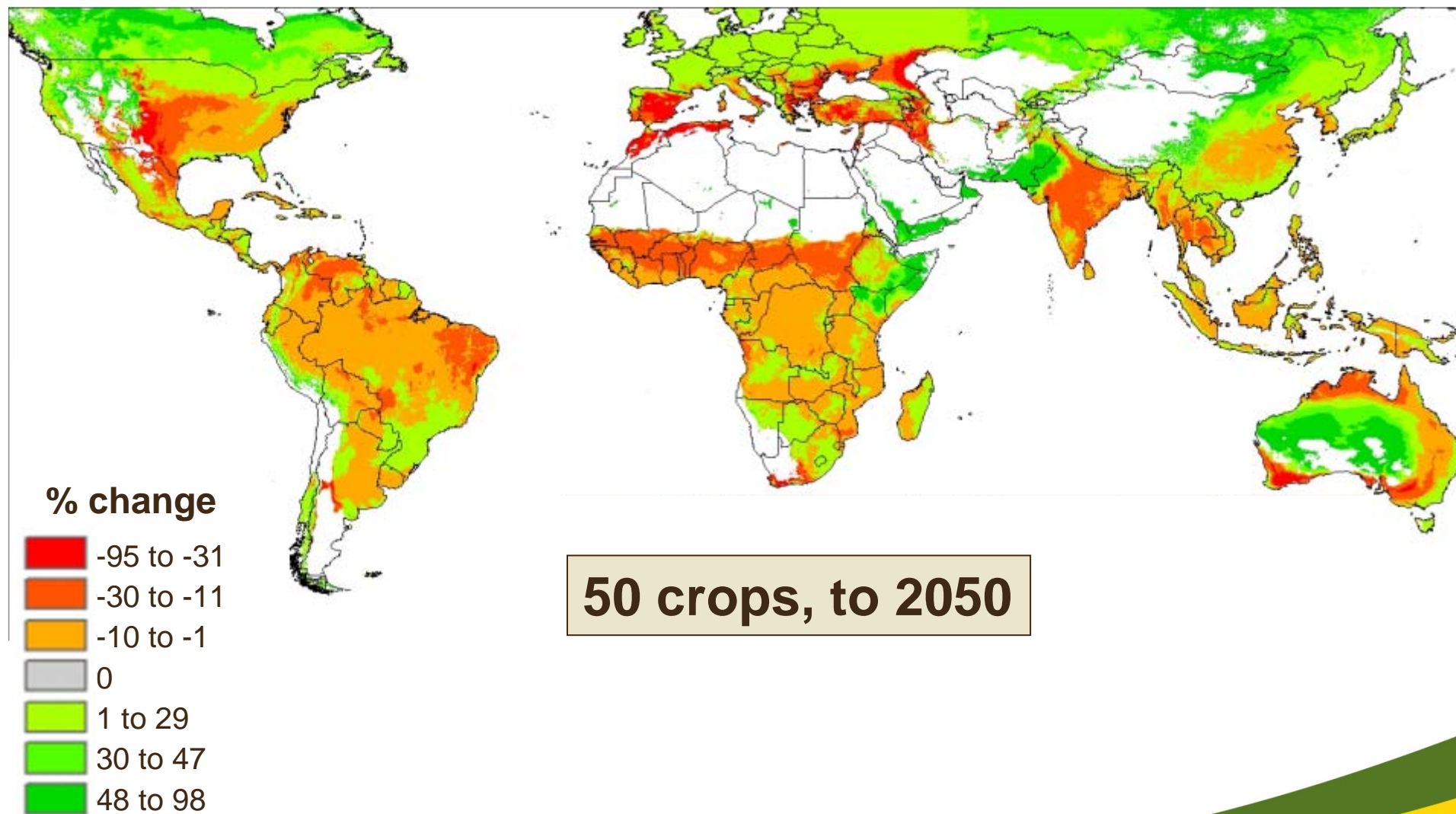
In order to meet global demands, we will need

60-70%
more food
by 2050.

Long term impacts on production

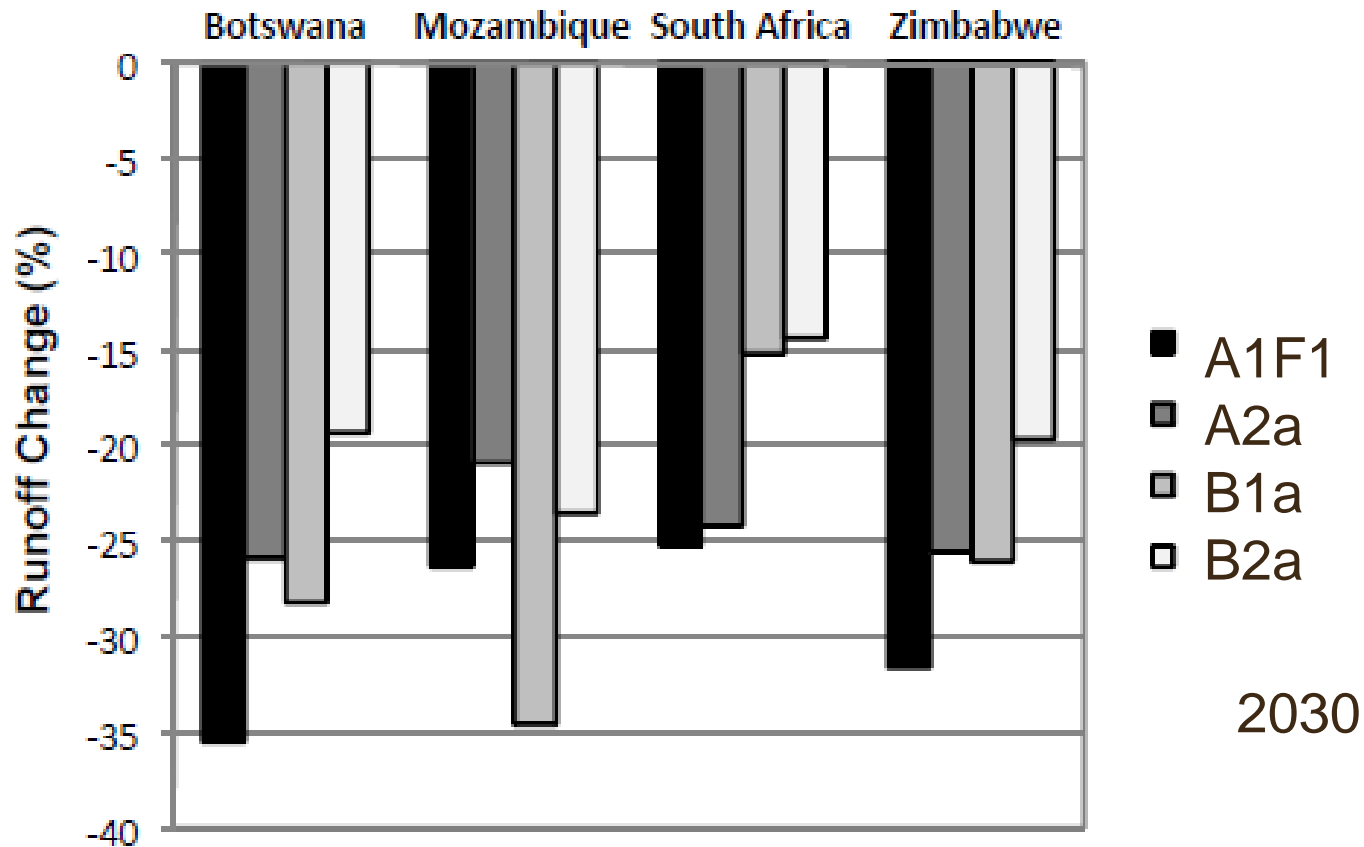


Crop suitability will fall in many areas



Andrew Jarvis, CIAT/CAAFS

Irrigation will be impacted

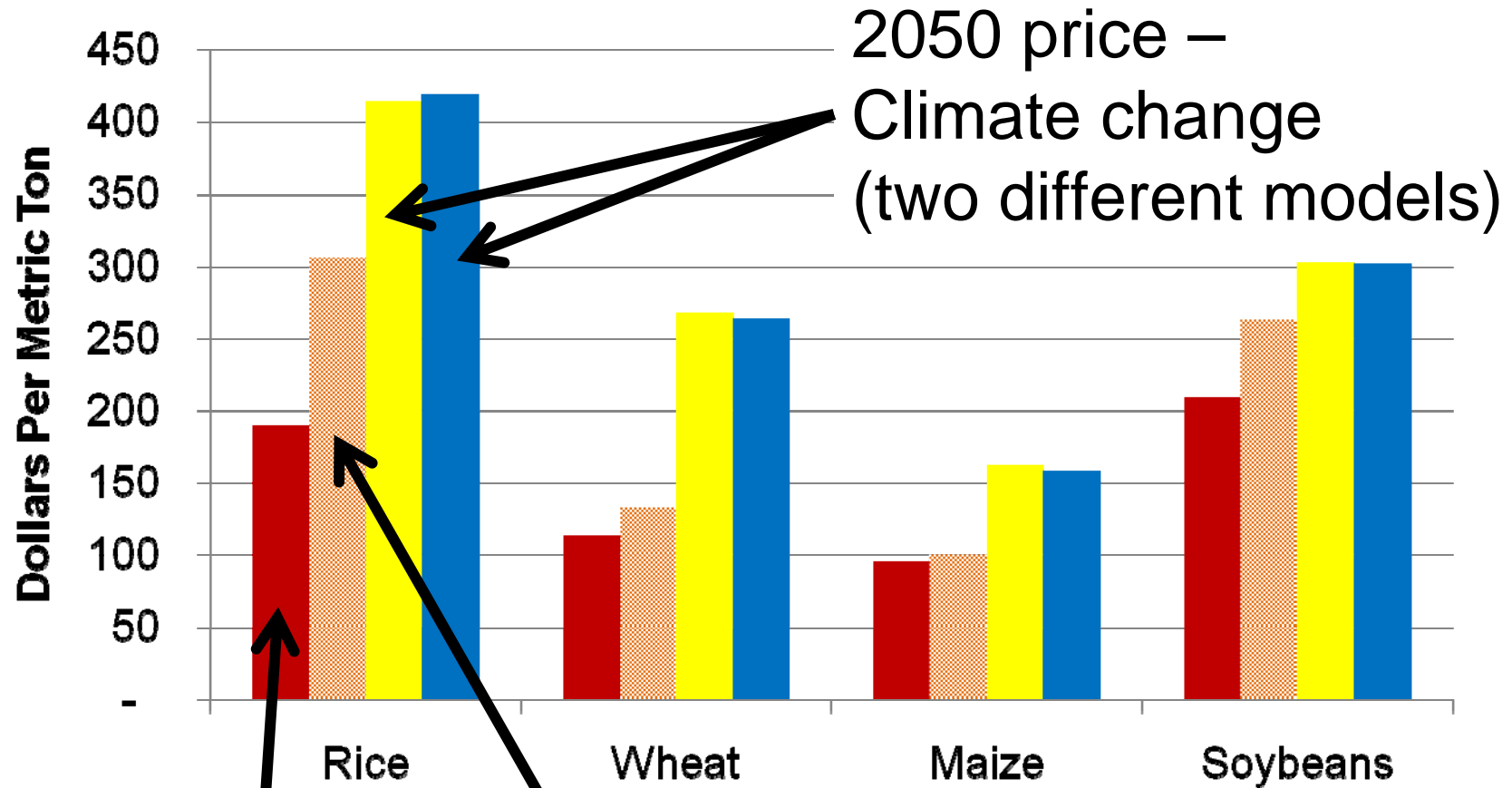


2030

Impacts on prices and food security



Food price rises



Current price

2050 price –
No climate change



IFPRI

Jerry Nelson

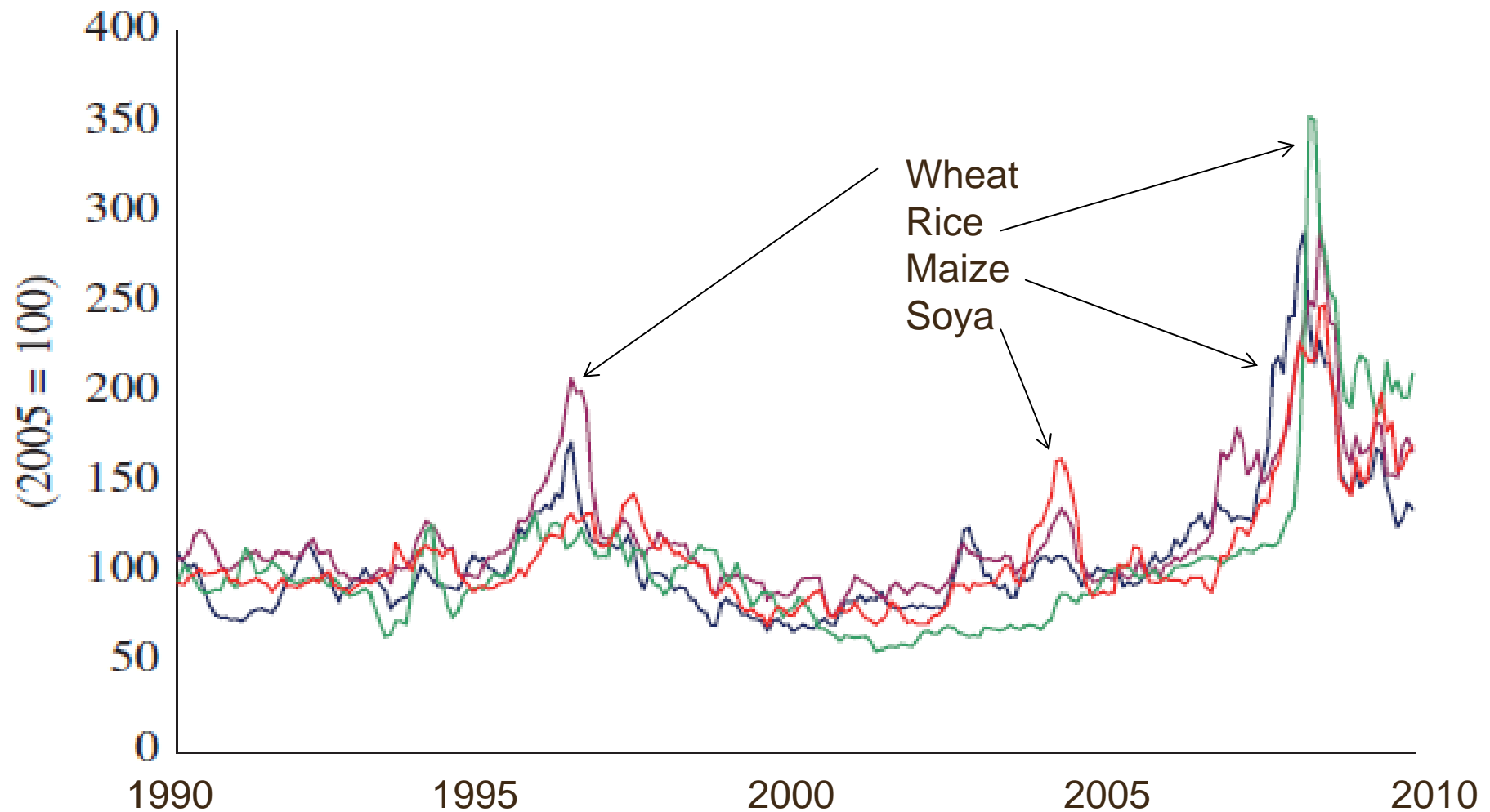
“Unchecked climate change will result in a 20% increase in malnourished children by 2050,”



Gerald Nelson, IFPRI/CCAFS

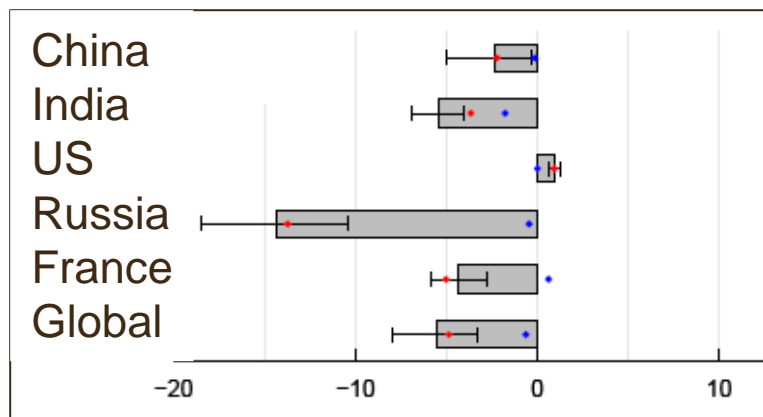
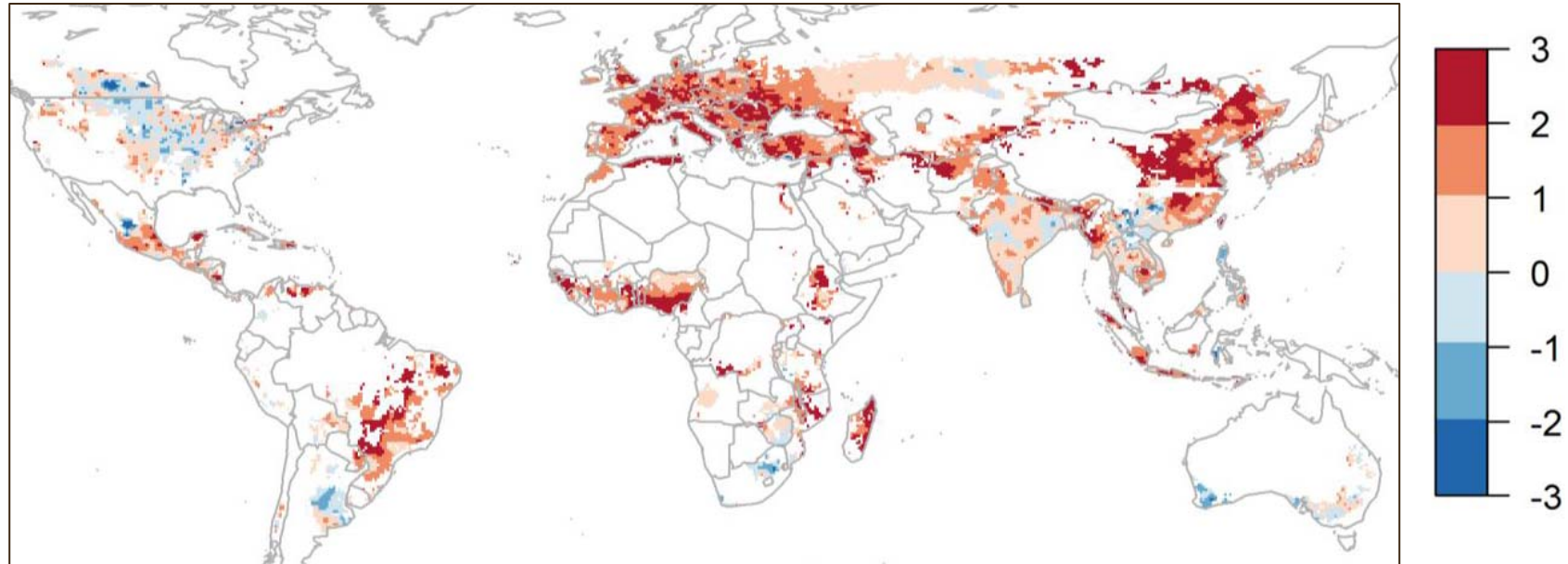
Impacts already measurable





- 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 15th 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

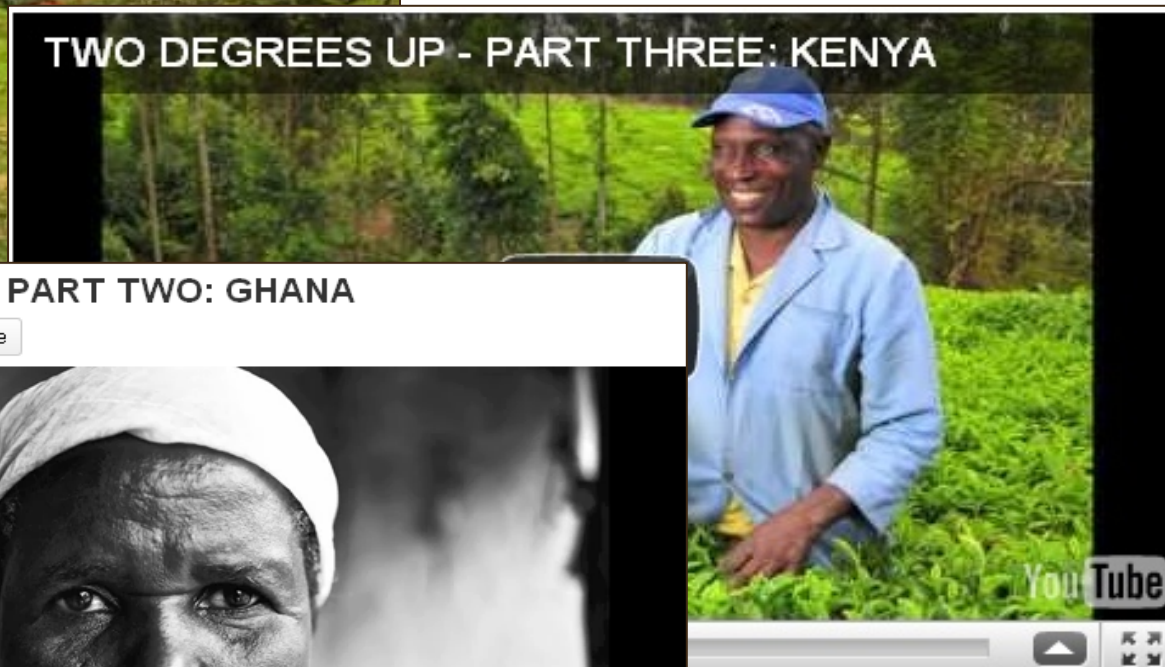
Incremental:

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

Transformative

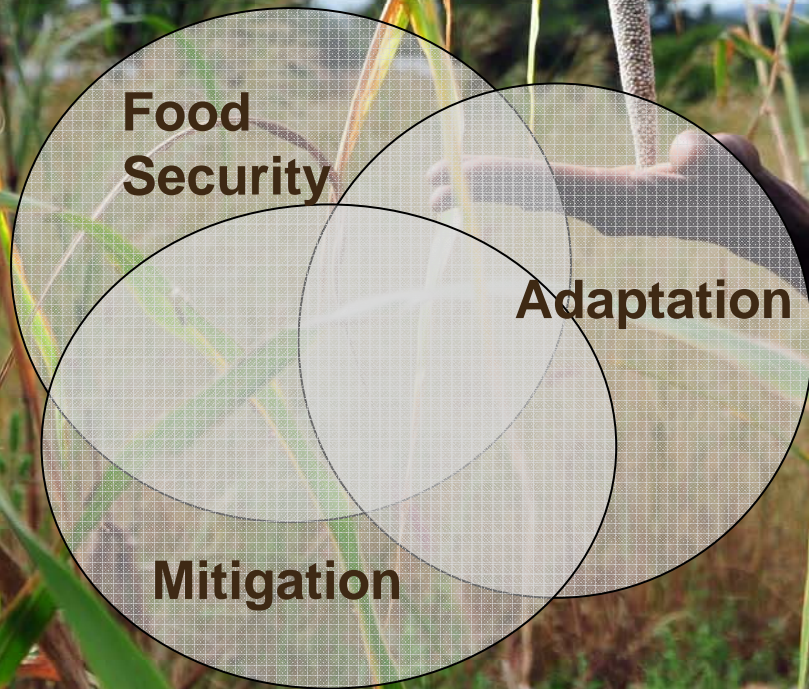
- Relocation of grape production or wineries to cooler regions
- Shifts to other crops
- Diversify into additional on and off-farm income-generating activities

Parks et al CSIRO



Message 1:

Recognise the multiple roles of agriculture



Adap
tatio
n



A photograph of a woman wearing a blue headscarf and a blue shawl, looking directly at 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 leaves in a lush green field. She is leaning over the plants, and a large woven basket is visible behind her. The background consists of a dense forest of tall trees.

Thank you

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

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

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

www.ccafs.cgiar.org