

## Towards Zero Hunger

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## Outline

- The challenge of Global Food Security
- Yield gaps around the world
- Doing more with less
- Doing more with more
- Conclusions and questions



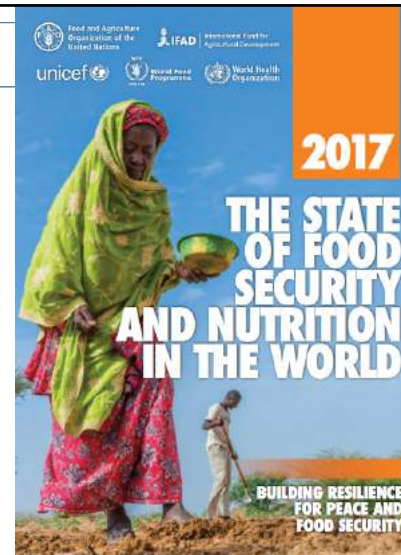
## The Sustainable Development Goals 2015–2030



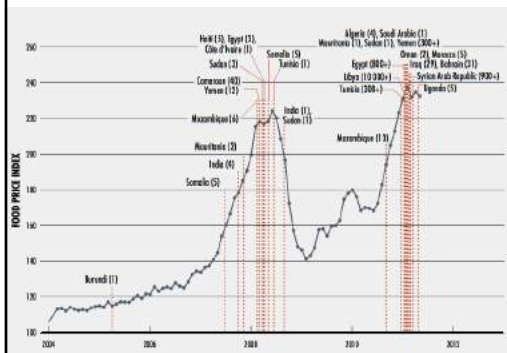
SDG 2 End hunger, achieve food security and improved nutrition and promote sustainable agriculture

## Food Security

- First time report focuses on conflict
- Worrying increase in food insecurity



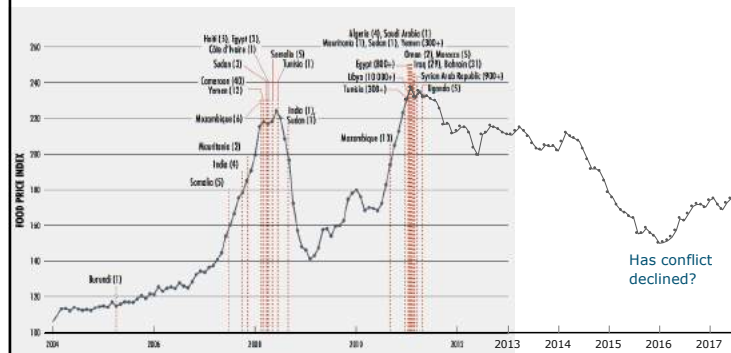
## Sudden food price surges have triggered conflict in more than 40 countries



FAO, IFAD, UNICEF, WFP & WHO (2017) *The State of Food Security and Nutrition in the World. Building resilience for peace and food security*. FAO, Rome.

Lagi, M., Bertrand, K.Z. & Bar-Yam, Y. (2011) *The food crises and political instability in North Africa and the Middle East*. New England Complex Systems Institute, Cambridge, USA.

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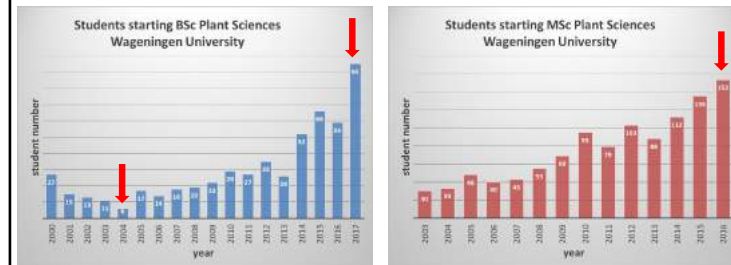
## Global impacts



The famous 'bread helmer' from Tahrir Square. Photograph: Khaled Abdullah Ali Al Mahdi/Reuters

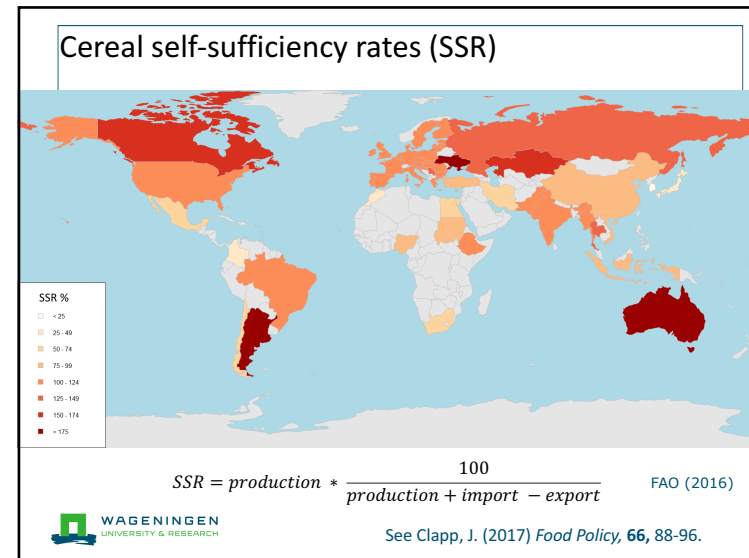
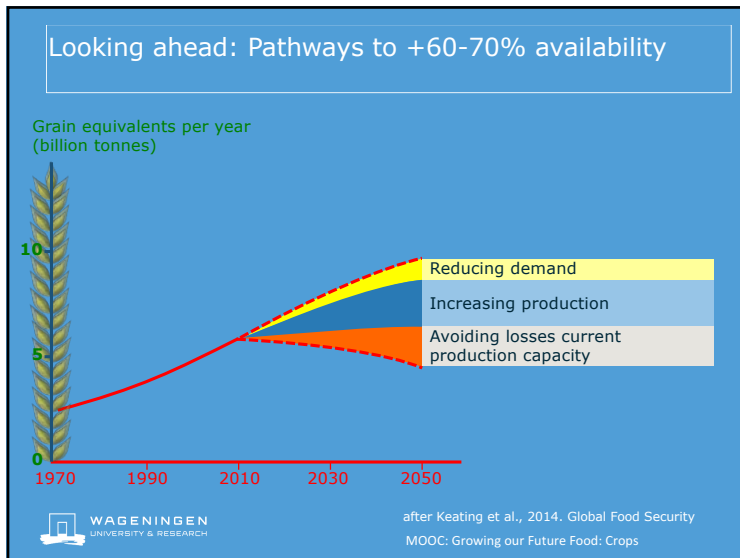
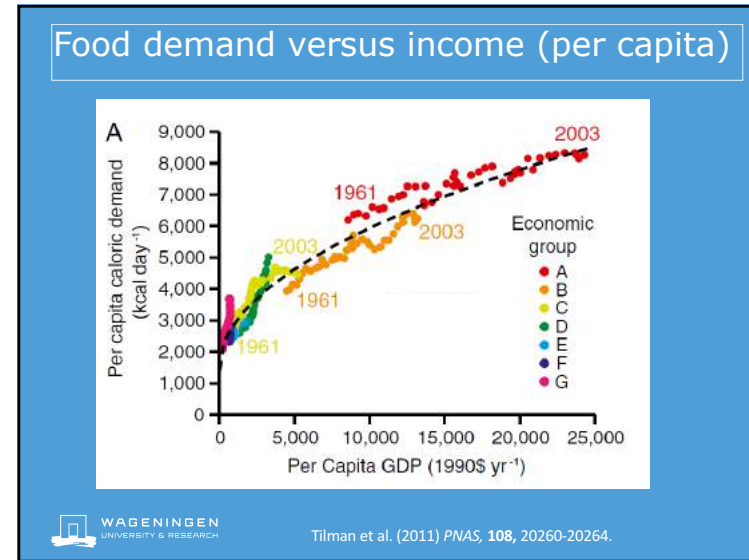
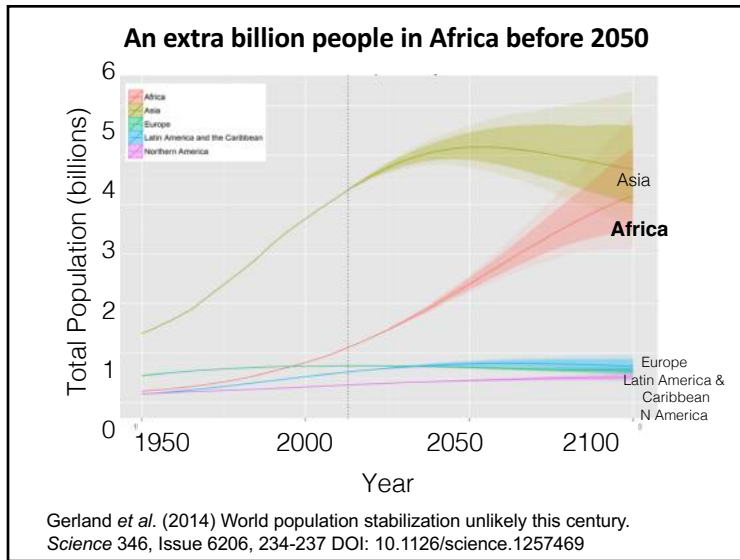


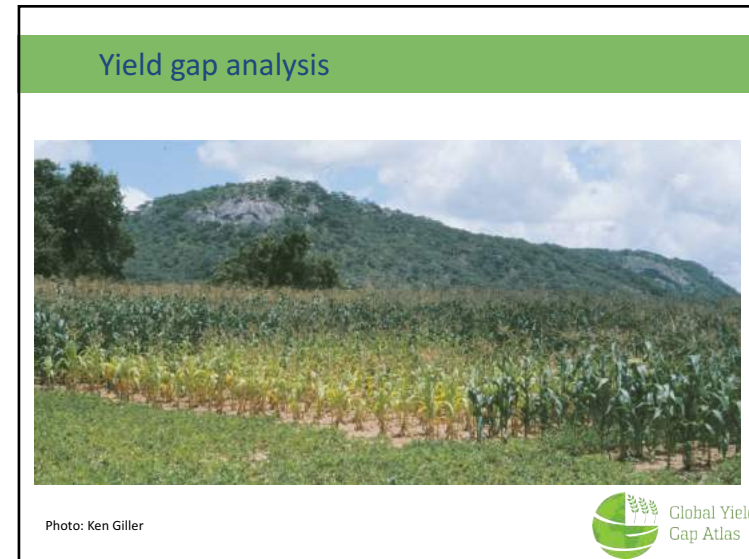
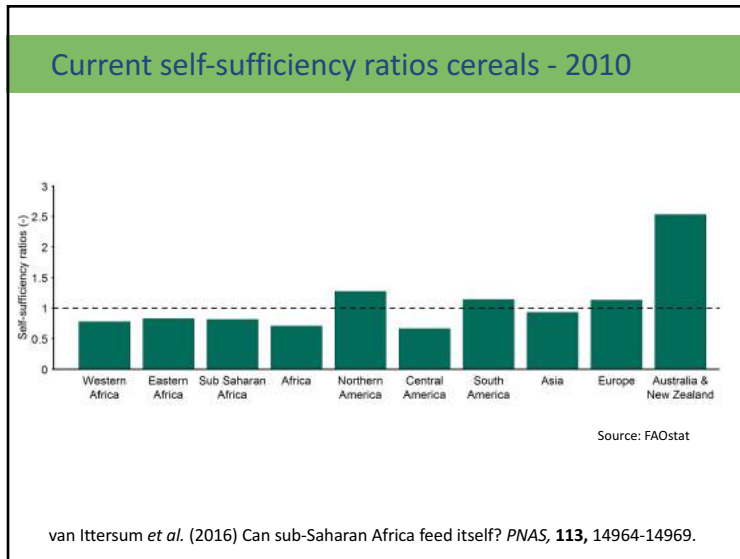
## Students studying Plant Sciences



A Golden Age for Plant Sciences?







### Global Yield Gap Atlas

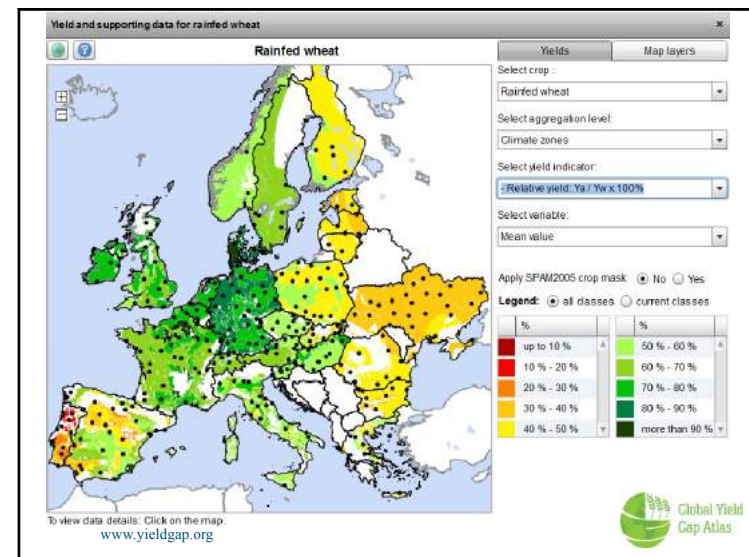
Wageningen UR, University of Nebraska, ICRISAT, AfricaRice, CIMMYT and many regional and national partners

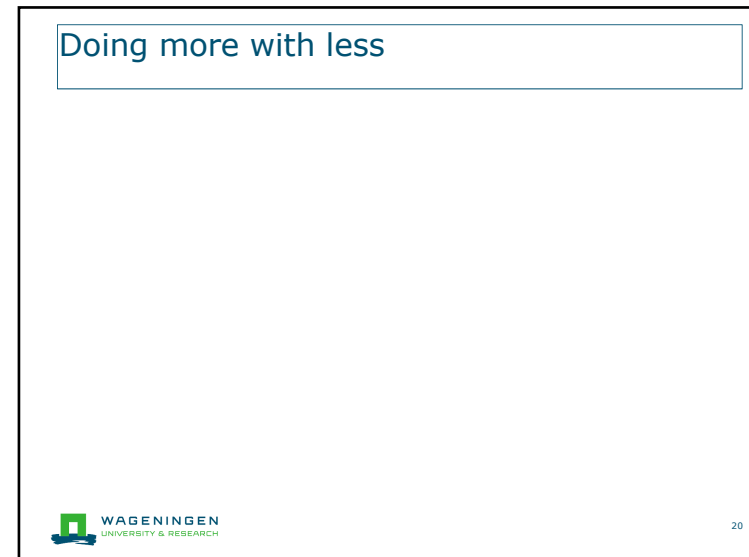
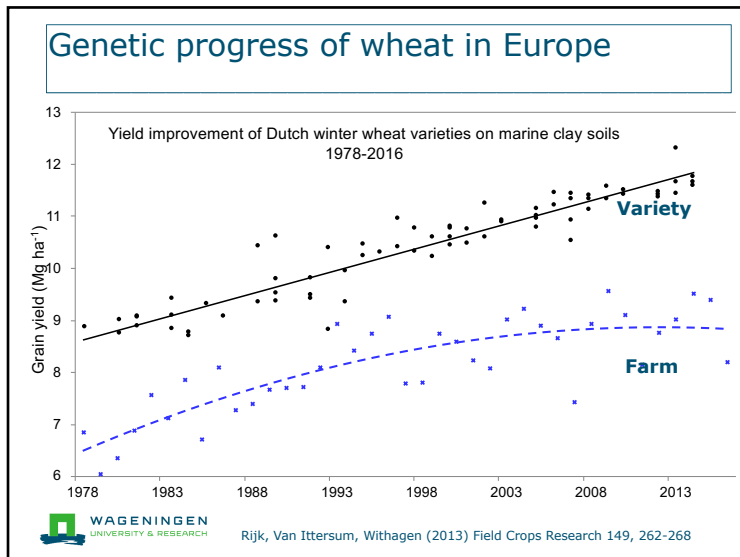
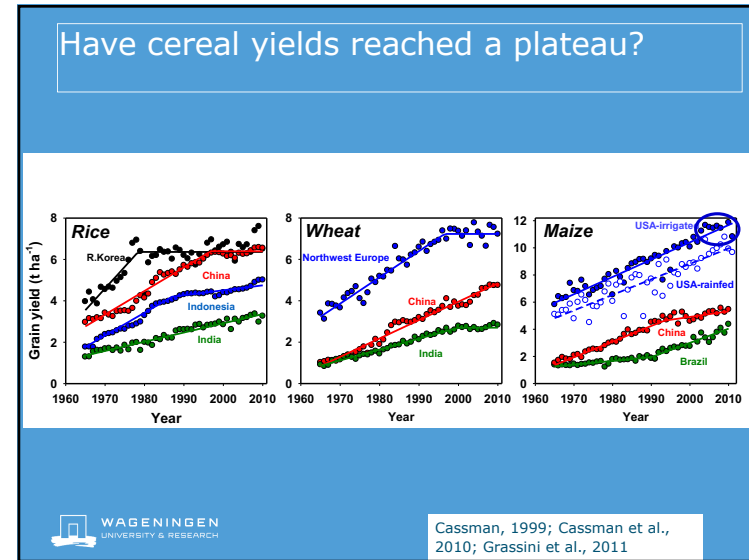
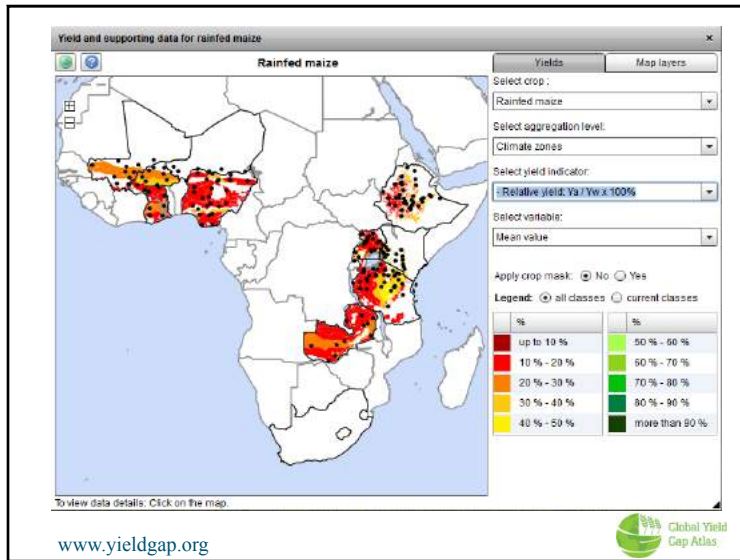
Led by Martin van Ittersum and Ken Cassman

- Major food crops in the world
- Global protocol with local application
- Local data and evaluation
- Strong agronomic foundation

[www.yieldgap.org](http://www.yieldgap.org)

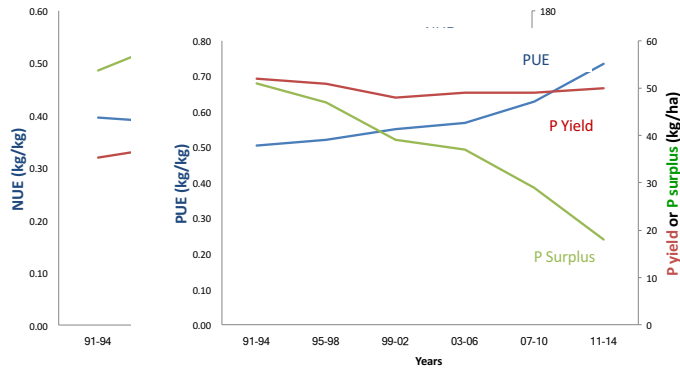
64 countries - October 2017





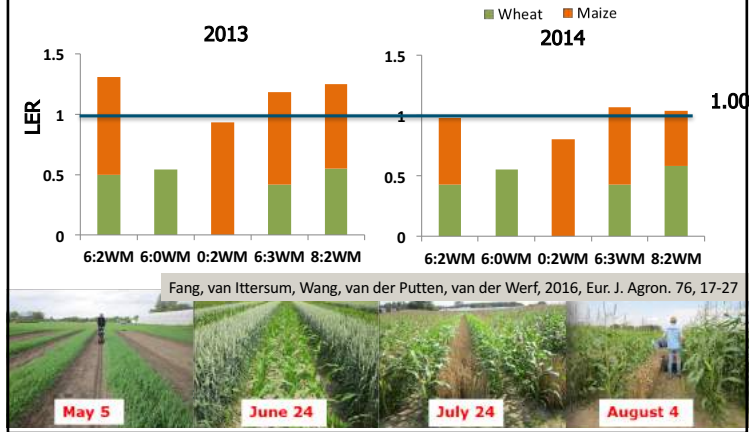


### Yield – Use efficiency - Surplus



Drawn by M. Van Ittersum based on Prins, H., C. Daatselaar & T. de Koeijer (2016) Wageningen Economic Research.

### Intercropping



### Doing more with more



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### Climbing beans in Rwanda



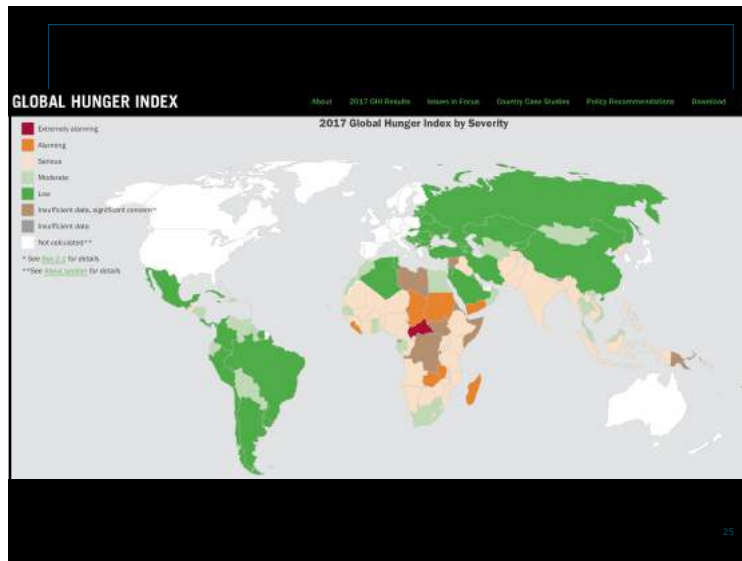
No manure



With Manure and P



Putting nitrogen fixation to work for smallholder farmers in Africa



## Conclusions and Questions

- Global Food Security is a key geo-political issue
- Plant Science is at the heart of ensuring food supply
- When and where should we try and close yield gaps?
- When should we strive to do more with less?
- When should we strive to do more with more?
- Who will produce the World's food?

