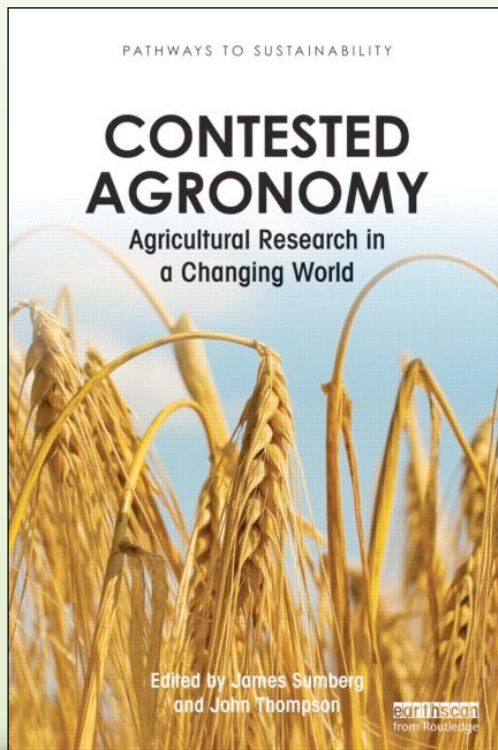
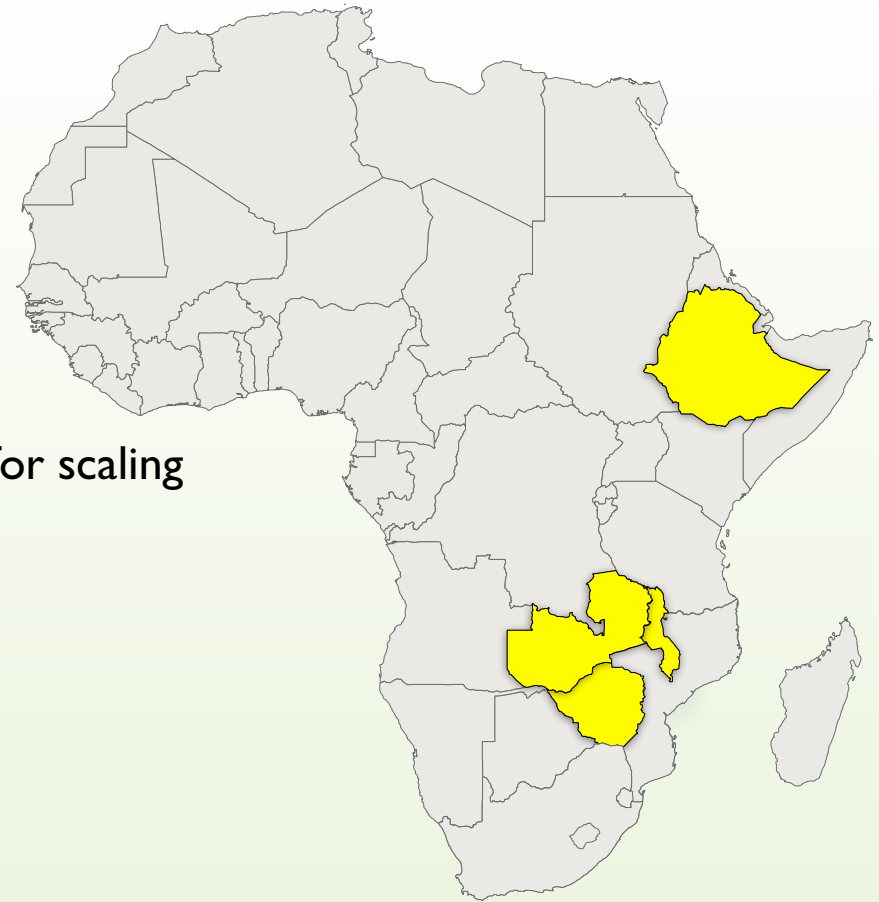


# Outline

1. A political agronomy perspective
2. Changing context of AR4D\*
3. Observing on-farm experiments in Africa
4. Experimental outcomes and implications for scaling

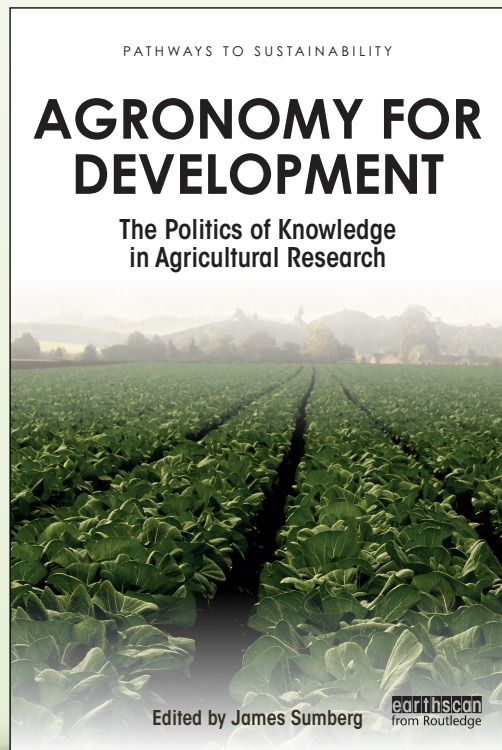


Andersson, J.A. and K.E. Giller (2012)

‘On Heretics and God’s Blanket Salesmen: Contested Claims for Conservation Agriculture and the politics of its promotion in African smallholder farming.’

# I. Political agronomy perspective

- Agronomy as politically situated practice
- Focus on everyday practice of agricultural research
- Politics of collaboration, partnerships, stakeholder engagements
- Dynamics of epistemic communities (example: Andersson and Giller, 2012)



*Special Issue:*

**Doing development-oriented agronomy:  
Concepts, Methods and Findings**

- ▶ de Roo, Nina *et al.* (2018) 'On-Farm Trials for Development Impact? The Organisation of Research for Scaling Agricultural Technologies'
- ▶ Andersson, Jens A. *et al.* (2018) 'The practice of on-farm experiments in Africa: Anthropological observations on trial design, management and outcomes'

Chipata district, eastern Zambia (2013)



## 2. Changing context of AR4D

- From research *output* to *outcomes*:  
Contribution to metrics of use?
- Impact at scale
- On-farm experiments to simultaneously understand and spur technology adoption
- From technology development/evaluation to the practice of development

### 3. Observing on-farm experiments in Africa



- Tension between conducting experiment and creating conditions for it to perform...

*‘The farmer needs to be knowledgeable and needs to have the necessary resources and interest to manage the trial well. If not, the trial might fail. Our job is to show that the technology works, it is the job of extension to make sure that other farmers will adopt it.’  
(de Roo et al. 2018)*

- Bias may be introduced...

*'Visitor-book' farmer and extension worker, Monze, Zambia (October 2013)*





- Proximity of trials: Replicating bio-physical conditions, save researchers' time;
- Standardisation of packages (*inputs, management*) is good for comparing treatments;

*Yet, re-creating controlled experimental setting may limit scaling potential...  
bio-physical and socio-economic differences among farmers and farm locations not analysed*



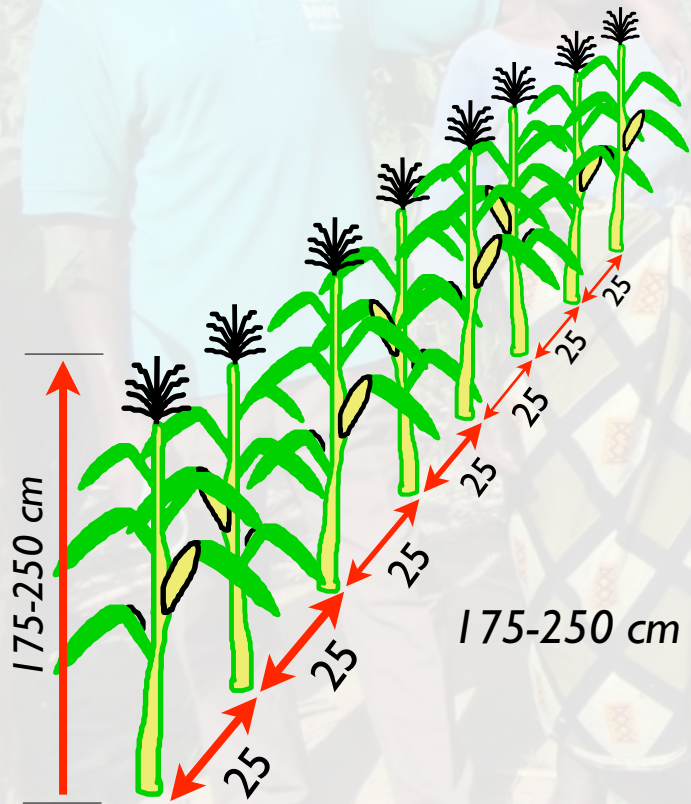
## What is 'farmer practice'?

- ridge-and-furrow / ploughing
- ~~continuous, sole cropping maize~~
- ~~all crop residues removed / grazed~~
- ~~(thinned to) one/two maize seed per station~~
- use of hybrid varieties + OPV / landraces
- ~~ca 100 kg/ha NPK~~
- ~~ca 150 kg/ha Urea~~ rates+timing vary
- ~~timely weeding~~
- ...

*'Retaining crop residues 'in-situ', Kasungu district, central Malawi (February 2013)*



'Retaining crop residues 'in-situ', Kasungu district, central Malawi (February 2013)



175-250 cm = 8-11 plants  
vs.  
14-15 stalks





*control treatment:*  
**'Farmer Practice'**

- tillage (*hand hoe*)
- no crop residues
- ridge-and-furrow
- manual hoeing
- manual weeding

*experimental treatment:*  
**Conservation Ag.**

- no-till
- no crop residues (*1st yr*)
- planted on flat
- dibble stick planting
- herbicides used

TREATMENT 2  
C.A.  
Tank Mix, Maize  
Continuous

On-farm tillage trial, Monze district, southern Zambia (October 2013)

control

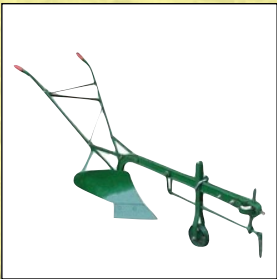
**'Farmer practice'**

ploughing  
+ weeding

crop residues grazed

44,000 plants.ha<sup>-1</sup>

compound D  
Urea



T1

**ripper**

herbicides  
+ weeding




crop residues  
retained

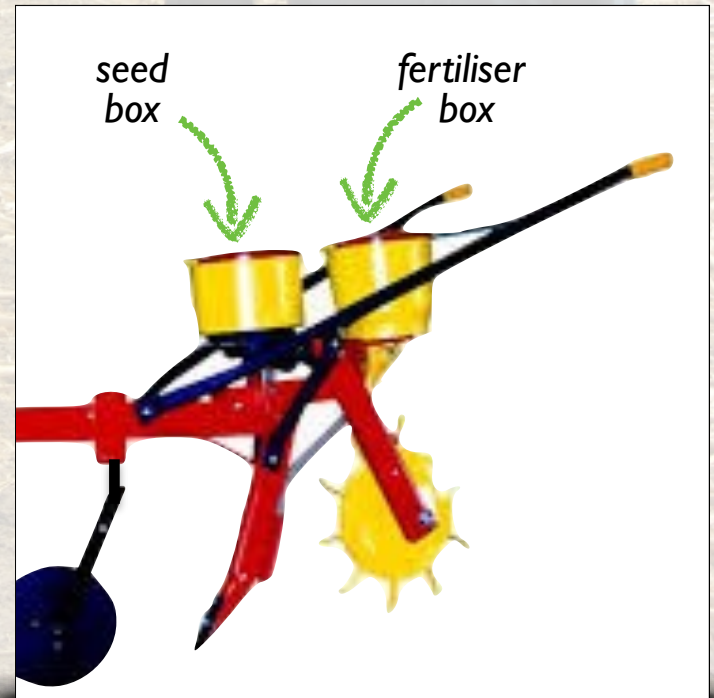
44,000 plants.ha<sup>-1</sup>

compound D  
Urea



On-farm tillage trial, Monze district, southern Zambia (October 2013)

control	T1	T2
<b>'Farmer practice'</b> ploughing + weeding	<b>ripper</b> herbicides + weeding	<b>direct seeder</b> herbicides + weeding
crop residues grazed	crop residues retained	crop residues retained
44,000 plants.ha <sup>-1</sup>	44,000 plants.ha <sup>-1</sup>	44,000 plants.ha <sup>-1</sup>
compound D Urea	compound D Urea	compound D Urea
		

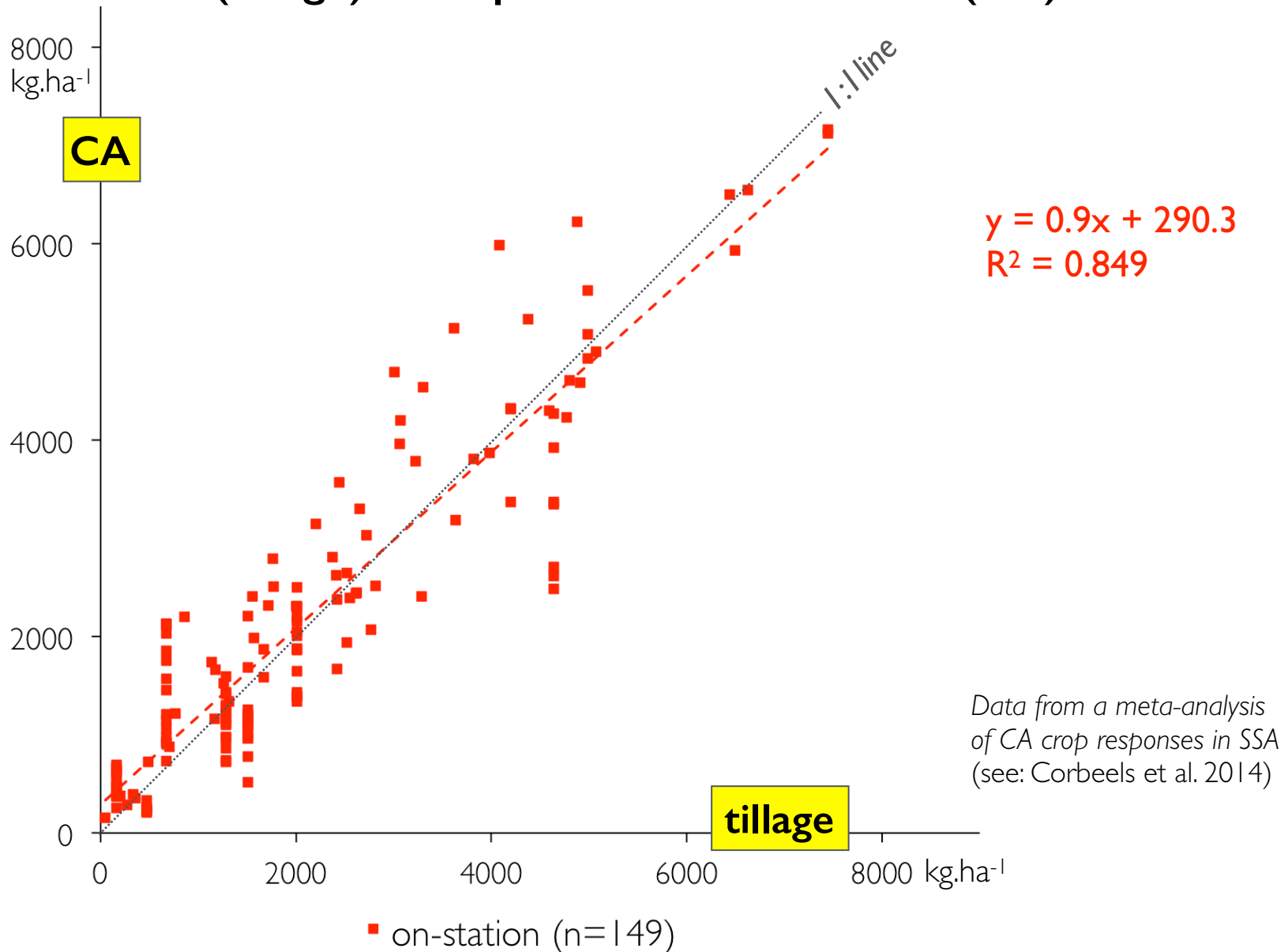


*Researchers visit on-farm trial, Lundazi district, eastern Zambia (February 2013)*

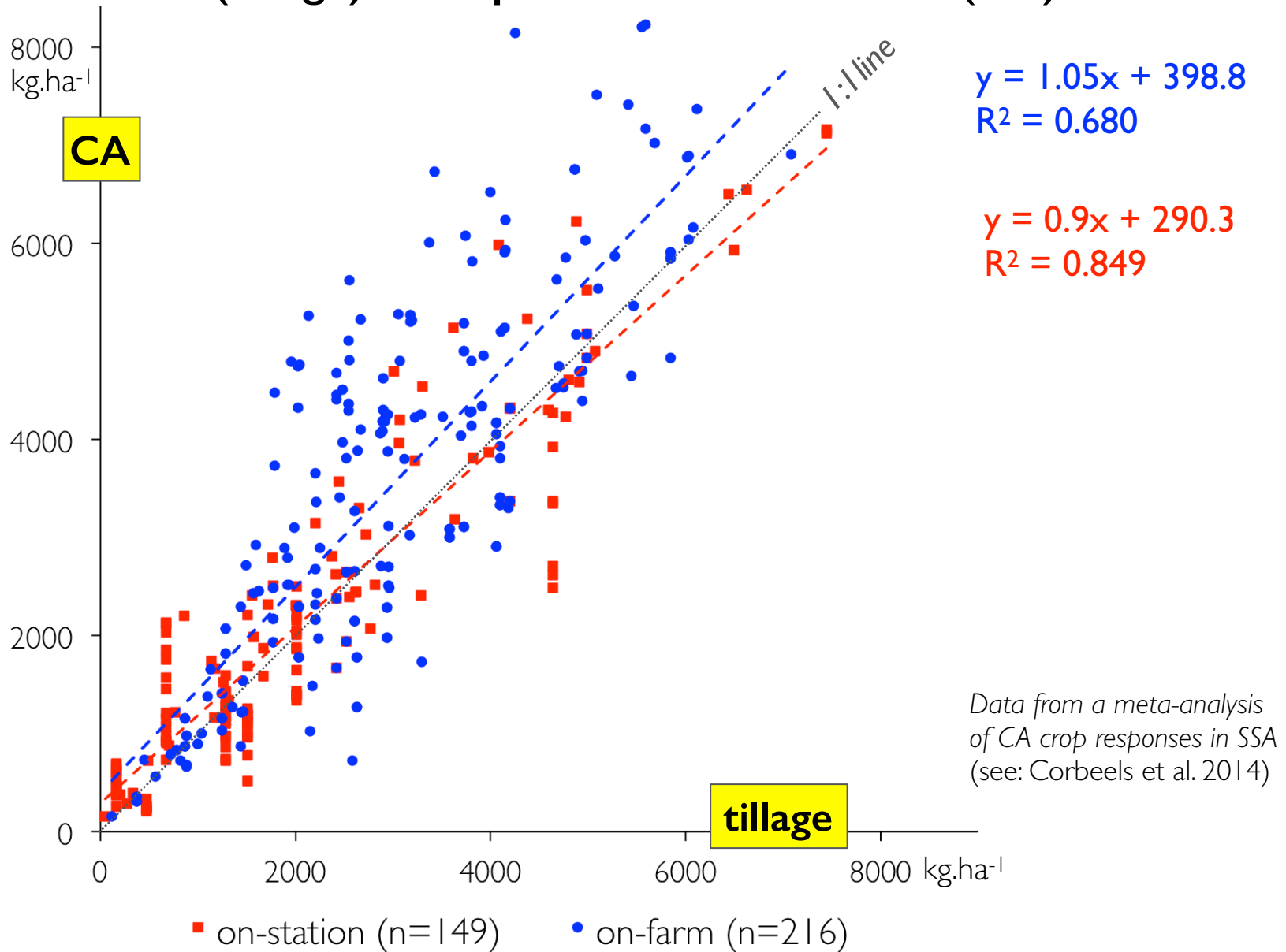


**On-farm experiments as public performances?**

# Pair-wise comparison of maize yield differences in southern Africa: control (tillage) vs. experimental treatments (CA)



# Pair-wise comparison of maize yield differences in southern Africa: control (tillage) vs. experimental treatments (CA)



## 4. Experimental outcomes and implications for scaling



- **Converging interests of donors, researchers, farmers may shape experimental outcomes**  
*on-farm experiments may 'out-perform' on-station experiments (CA example)*
- **Selection biases (farmers, locations, technologies) create a receptive farmer audience, but may compromise on-farm experiments' wider applicability (scalability)**
- **Farmer participation in on-farm experiments does not equal technology adoption**  
*incentivised adoption is a product of the AR4D process*
- **On-farm trials ill-disposed towards replication at scale**  
*increased scale accompanied by increased heterogeneity in conditions*
- **Understanding technologies' scalability requires an understanding of the drivers of technology adoption at scale (on-farm experiments are a poorly suited method)**



**Thank you  
for your  
interest!**

**Jens A. Andersson**  
[j.andersson@cgiar.org](mailto:j.andersson@cgiar.org)