A golden age for agronomy?

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Three issues

1. Is this a ‘Golden Age’ for agronomy?
2. Contested Agronomy – the case of Conservation Agriculture
3. Future challenges - Agronomy in context

The development spotlight shifted

1990s – the dark ages?
2003 – Hilary Benn – White Paper – Agriculture and Poverty: Unlocking the Potential
2005 – Bill & Melinda Gates Foundation started their Agricultural Development Program
2006 – Rockefeller Foundation & BMGF started AGRA (Alliance for the Green Revolution in Africa)
2008 – World Development Report – Agriculture for Development

Grain prices

[Graph showing grain prices]
Global impacts

https://bbc.com/

Publications on “food security”

Students studying Plant Sciences

Students starting BSc Plant Sciences Wageningen University

Students starting MSc Plant Sciences Wageningen University
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Potential solutions - Nitrogen fixing legumes

- Legume green manures
- Grain legumes
- Legume tree fallows
- Legume forages

The problem of poor soil fertility in Africa

Green manures on smallholder farms

…there are no silver bullets….
FAO Workshop 2008
Investment in soil health = Conservation Agriculture

Principles of Conservation Agriculture
1. Minimum or no mechanical soil disturbance
2. Permanent organic soil cover – maintain crop residues to achieve >30% soil cover

BOX 2 Constraints to adoption of Conservation Agriculture
• The mind-set of the plough. The plough has become the symbol of agriculture and many, including farmers, extension agents, researchers, university professors, and politicians have difficulty in accepting that agriculture is possible without tillage.

The heretics' view
• Conservation agriculture promoted as a panacea
• Univocal promotion by international organizations, NGOs (and churches!) stifled debate
  e.g. .....“the plough is the enemy of sustainability”

See http://www.farming-gods-way.org/

Two main arguments:
1. Scientific evidence to support the claims made for CA was unclear and inconsistent
2. CA did not ‘fit’ within the majority of smallholder farming systems in Africa


http://conservationag.wordpress.com/2009/12/01/ken-gillers-paper-on-conservation-agriculture
Farm(ers) are not all the same!

Farming systems

Crop production intensification will be built on farming systems that offer a range of productivity, socio-economic and environmental benefits to producers and to society at large.

... the text clearly says “Trials in southern Africa saw a six-fold increase in maize yields”; it does not claim a 6 fold yield increase for CA in general...

Theodor Friedrich, FAO, 21/3/11

CA in Central Kenya on diverse fields

Second question

2. Is farming (as we know it) heading for extinction?

Implication if Sweet Spots are the only places where CF is adopted

Giller’s Gauntlet:

“Perhaps a simpler conclusion is that under present circumstances Conservation Agriculture is inappropriate for the vast majority of resource-constrained smallholder farmers and farming systems in Sub-Saharan Africa.”
Have you brought me fertilizer?
Protracted Relief Programme, 2010
Zimbabwe, inputs provided for 0.25 ha

Evidence for adoption of CA in Madagascar

Does the contestation of CA only concern less-developed countries?
- No!

- John Kirkegaard et al. (2014) Sense and nonsense in conservation agriculture: Principles, pragmatism and productivity in Australian mixed farming systems

  *Frontiers in Plant Science*, **6**, Article 870
Three issues

1. Is this a ‘Golden Age’ for agronomy? **Yes!**
2. Contested Agronomy – the case of Conservation Agriculture **...and the beat goes on...**
3. Future challenges – agronomy in context

Effect of P-fertilizer and/or inoculant on soybean grain yield (t ha\(^{-1}\)) in Nigeria, 2011 and 2012

Response to P and inoculation with soybean in western Kenya

Cumulative probability of economic return to use of inputs in soybean (USD ha\(^{-1}\)) in Nigeria, 2011 and 2012

Putting nitrogen fixation to work for smallholder farmers in Africa

A ‘Golden Age’ for agronomy?

Agronomy is in the spotlight

Are we ready for the Great Leap forward?