

# Doing More with Less – or More with More? The Future of Smallholder Farming in Africa

**Ken E. Giller**

Plant Production Systems, Wageningen University, PO Box 430, 6700AK Wageningen, The Netherlands, ken.giller@wur.nl

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## **Extended Abstract**

Doing 'More with Less' is a powerful framing for agriculture. It conjures up a frugal and efficient approach to farming that makes the best of scarce resources. In a world faced with a burgeoning population, the increasing impacts of climate change and a prerogative to protect biodiversity, and other ecosystem services the earth provides, there is an urgent need for 'More with Less'. There are certainly production systems in the world which are currently wasteful – where input use could be reduced without reducing yield substantially. Yet there are others, notably smallholder agriculture in sub-Saharan Africa, where farmers are unable to exploit the genetic potential of new crop varieties due to lack of inputs (Tittonell and Giller 2013). So when, where and how should we strive to do More with Less?

Doing more with less fertilisers, less herbicides and plant protection agents and less energy inputs is desirable. Using less of one input often leads to substitution by another – an obvious example being the use of herbicides as opposed to mechanical weed control. At the heart of Doing More with Less is striving for resource use efficiency (RUE). Yet focus solely on RUE at field scale can compromise efficiencies at farm or landscape (Van Noordwijk and Brussaard 2014). So how can trade-offs among inputs and compromises across scales be avoided? And how far can inputs be reduced before yields are compromised – leading to a drive for extensification of agriculture?

Intensification is a means of doing More with Less land – essential to spare land for wild nature (Baudron and Giller 2014). Intensification also means doing More with Less time and labour – for which farmers strive across the world! Although farming is a central activity for food self-sufficiency and income of smallholders, most rural households have multiple income streams and competing demands on their labour.

Intensification also requires investment in inputs: smallholder farmers may prefer approaches that allow doing More with Less capital. In turn, less capital intensive approaches often result in less yield and the need for more land to achieve the same production. Where rural populations are dense, small farm sizes and fragmentation of land compromise opportunities for investment to intensify agriculture. Enhancing agricultural productivity to meet national goals for food security may require doing More with Less farmers! Although a challenging and perhaps unpalatable prospect, history has repeatedly seen consolidation of land to allow agricultural transformation, provide necessary economies of scale and investment in mechanisation and other technology. It seems inevitable that farms in Africa need to be larger to meet national goals for food security. Obviously any such transition to fewer, larger farms will require alternative rural or urban livelihoods for a large section of the population.

In my talk I will explore the opportunities for Doing More with Less, and the trade-offs and synergies that may occur between competing objectives and resources. The diversity of agriculture across the globe, across Africa, and within every farming system (Giller 2013), country and continent demands differentiated and tailor-made approaches. The complexity of choices requires a reflexive, participatory and explorative approach. I will discuss emerging ideas for a 'systems agronomy' that allows such analysis at multiple levels from the field to the farm and farming system and beyond (Giller et al. 2015). I look forward to discussing and developing these ideas at the conference.

## **References**

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