

Organic yields lag conventional by 20% in developed countries, 43% in Africa, meta-analyses find

In most regions of the world, row-crop farming is primarily conducted in [large] fields, but knowledge of processes and management recommendations are typically based on research in [small] experimental plots. This scale mismatch has long raised questions about inferences that are made from plot-scale experiments to entire fields or farms

Experimental-scale–related yield gaps for organic grain crops can be especially substantial. Recent meta-analyses of plot-scale studies suggest organic yield penalties of 20–25% on average, although possibly as low as 8%. Farmer surveys, on the other hand, report organic grain yield penalties of 27–34%.

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[Key highlights]

- The corn yield under conventional management was almost twice that in the organic management when precipitation levels exceeded 500 mm.
- Conventional management was more resilient to field-scale challenges than alternative practices, which were more dependent on timely management interventions; in particular, mechanical weed control.
- Corn yields in the field-scale experiment Bio [organic] treatment were >45% lower than in Conv [conventional] management, and wheat Bio yields were >30% lower than in Conv management
- [S]oybean [organic] yield reductions were 55%, 27%, and 88% in 2010, 2011, and 2012, respectively.

[O]rganic performance in developing countries to be even more challenged than in developed countries (43% yield penalties for developing vs. 20% for developed countries). Our findings suggest that this difference will be still greater at the farm scale, emphasizing the special need in developing countries to create technologies that are less time-sensitive and make efficient use of labor. This will be especially important where reduced-input farming is pursued out of necessity rather than choice, for example, in sub-Saharan Africa.

The GLP aggregated and excerpted this blog/article to reflect the diversity of news, opinion and analysis. Read full, original post: [Field-scale experiments reveal persistent yield gaps in low-input and organic cropping systems](#)