



Yields

“Agroecological farming can result in higher yields in the long term, as compared to conventional farming approaches”

Evidence

Comparative studies on different farming systems show that agroecological farming practices have the potential to sustainably increase yields, though these benefits may only manifest after a certain transition time. For example, a meta-analysis on studies from a diverse set of countries found that yields were 16% greater, on average, for agroecological practices as compared to conventional practices⁷. Similar findings are shown in meta-analyses on conservation agricultural practices, such as reduced tillage and mulching, which are often used as part of agroecological practices. For example, a large meta-analysis on studies from South Asia showed that conservation agriculture increases yields by 5.8%, on average, though yield gains are even higher in maize and wheat-based farming systems. When comparing yields in conventional and agroecological systems, a distinction between short-term and long-term differences is important. In conventional farming systems, short-term yield gains can result in long-term yield losses across the agricultural landscape, for example, due to soil degradation or loss of biodiversity. In contrast, agroecological approaches aim to sustainably manage the natural resource base, which can result in higher yield gain over time. Empirical evidence on differences in short-term and long-term yields is provided in a meta-analysis on conservation agriculture in Sub-Saharan Africa, which found that yield advantages in conservation agriculture may be small at first but gradually increase. Similar findings are shown in a meta-analysis on agroecological practices, which finds that increased diversity strongly correlates with more stable production and, therefore, long-term and livelihood resilience (see also section “Resilience”). In addition to the time dimension, also the choice of the baseline for comparisons and the metrics chosen to estimate yields, for example, single-crop yields versus more comprehensive metrics for “yield” (such as the land equivalent ratio, LER), are important determinants for the findings.

Success Factors

Key success factors to sustainably increasing yields in agroecological farming is the in-depth knowledge of cropping systems and ecology required to diversify agricultural production (e.g. multiple cropping and crop rotation). Therefore, investing in improving and retaining human capital, i.e. the skills, knowledge and experience of employees of agroecological businesses, is critical (see for example, the [SEKEM showcase](#)). Long-term commitment and planning horizons together with beneficial work conditions, are hence crucial to optimize agroecological production and sustainably increasing yields.

Barriers

A key challenge is building the kind of detailed in-depth and context specific knowledge and expertise of agricultural practices needed. When these factors are lacking, agroecological approaches cannot compete effectively with conventional farming systems and its ready to use packages of seed, fertilizer, and pesticide. In addition, key stakeholders, including many policymakers and investors, still tend to focus on short-term gains to achieve rapid financial results. The resulting business environment presents significant barriers for agroecological businesses to attract investment and growth. In Europe, for example, policies have traditionally pushed for agriculture at large scale with a focus on maximizing single crop yields, using more synthetic inputs and requiring more financial investment. These policies are slowly changing by increasingly taking into account social and environmental sustainability.