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Delivering Climate Change Outcomes with Agroecology: Evidence and Actions Needed

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Abstract

We conducted a rapid evidence-based review to assess the quality and strength of evidence regarding (i) the impact of agroecological approaches on climate change mitigation and adaptation in low and middle income countries, and (ii) the programming approaches and conditions supporting large-scale transitions to agroecology. We found the following:

Substantial evidence exists for climate change adaptation associated with practices and systems aligned with agroecology; e.g., farm diversification, agroforestry and organic agriculture. The agroecological approach with the strongest body of evidence for impacts on climate change adaptation was farm diversification (strong evidence and high agreement). This included positive impacts of diversification on crop yield, pollination, pest control, nutrient cycling, water regulation and soil fertility. Agroforestry had a positive impact on biodiversity, water regulation, soil carbon, nitrogen and fertility and for buffering temperature extremes. Organic agriculture improved regulating (pest, water, nutrient) and supporting services (soils, biodiversity).

Evidence suggests that agroecology provides more climate change adaptation and mitigation than conventional agriculture by emphasising locally relevant solutions, participatory processes and co-creation of knowledge. Specifically, co-creation and sharing of knowledge supported farmers' capacity to adapt to local conditions (strong evidence, medium agreement). Multiple lines of evidence show that engaging with local knowledge through participatory and educational approaches are effective at adapting technologies to local contexts and thereby delivering improved climate change adaptation and mitigation.

No evidence was available for impacts related to response to extreme climate events and limited evidence for greenhouse gas emissions, as well as for agroecological livestock systems. There is clear need for more evidence from developing countries.

Recommendations include a focus on sustainability outcomes and tradeoffs, rather than contesting the meaning of labels. Although current evidence for agroecology is partial, these findings show the importance of the following to achieve climate change outcomes:

- Diversification of field and farm products and practices.
- Processes that support farmer innovation, co-learning and adaptation of innovations to local contexts

Keywords: Agroecology systematic literature review, climate change outcomes, diversification, recommendations

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