CROPPING SYSTEMS

The power of diversification*One Earth* **2**, 284–293 (2020)

To meet the UN's Sustainable Development Goal of zero hunger, agricultural production must be more resilient under the changing climate. Timothy M. Bowles from University of California, Berkeley and colleagues suggest that diversifying cropping systems can increase agricultural resilience to climate change-related threats.

Yield loss in maize from climate-change-driven heat and droughts could greatly impact global food security. The authors used historical maize yield data (16–58 years of data) from 11 long-term rain-fed experiments on crop rotation representing the major maize-producing regions in the US and Canada, and compared maize monoculture or two-crop rotations against more diverse rotations. Using multilevel regression analyses of the long-term yield datasets, they found that increasing rotational diversity in maize-based North American cropping systems improves maize yields over time and across all growing conditions, including unfavourable climate conditions. For instance, the yield loss was reduced by 14.0–89.9% in drought years. The authors suggest that approaches such as crop-rotation diversification are central to risk-reduction in agricultural food production and therefore policies and strategies are needed to help farmers better cope with this adaptation.

Although it is known that biodiversified farming systems could provide environmental benefits, this study is a step forward in assessing the extent to which crop-rotation diversification can confer agricultural resilience in the face of climate change.

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