***eLife’s* transparent reporting form**

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**Sample-size estimation**

* You should state whether an appropriate sample size was computed when the study was being designed
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* If no explicit power analysis was used, you should describe how you decided what sample (replicate) size (number) to use

Please outline where this information can be found within the submission (e.g., sections or figure legends), or explain why this information doesn’t apply to your submission:

This information can be found in the Materials and Methods, in the sections *Study sites* and *Experimental crop communities.*

**Replicates**

* You should report how often each experiment was performed
* You should include a definition of biological versus technical replication
* The data obtained should be provided and sufficient information should be provided to indicate the number of independent biological and/or technical replicates
* If you encountered any outliers, you should describe how these were handled
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This information can be found in the Materials and Methods, in the sections *Experimental crop communities, Data collection* and *Data analyses.*

**Statistical reporting**

* Statistical analysis methods should be described and justified
* Raw data should be presented in figures whenever informative to do so (typically when N per group is less than 10)
* For each experiment, you should identify the statistical tests used, exact values of N, definitions of center, methods of multiple test correction, and dispersion and precision measures (e.g., mean, median, SD, SEM, confidence intervals; and, for the major substantive results, a measure of effect size (e.g., Pearson's r, Cohen's d)
* Report exact p-values wherever possible alongside the summary statistics and 95% confidence intervals. These should be reported for all key questions and not only when the p-value is less than 0.05.

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Information about the statistical analyses be found in the Materials and Methods, in the section *Data analyses.* Figures including raw data (i.e. boxplots) can be found in the supplementary information. Exact values of N are specified for each analysis in the figure legends. Means and standard errors for each analyses can be directly seen on the plots. Effect sizes for the most important results can be found in the main text, in the *Results* section. P-values are reported in the *Results* section whenever a comparison or test result is mentioned.

(For large datasets, or papers with a very large number of statistical tests, you may upload a single table file with tests, Ns, etc., with reference to sections in the manuscript.)

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* Indicate how samples were allocated into experimental groups (in the case of clinical studies, please specify allocation to treatment method); if randomization was used, please also state if restricted randomization was applied
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This information can be found in the Materials and Methods, in the sections *Study sites, Experimental crop communities, Adaptation treatments,* and *Data analyses,* as well as in the figure legend of the first figure describing the results (Fig. 2).

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* We encourage you to upload relevant additional data files, such as numerical data that are represented as a graph in a figure, or as a summary table
* Where provided, these should be in the most useful format, and they can be uploaded as “Source data” files linked to a main figure or table
* Include model definition files including the full list of parameters used
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Please indicate the figures or tables for which source data files have been provided:

The source data can be found as a whole online, on a public repository, as well as the R code used for the analyses.