A mixed-model quantitative trait loci (QTL) analysis for multiple-environment trial data using environmental covariables for QTL-by-environment interactions, with an example in maize, pp. 1801–1813

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Complex quantitative traits are the outcome of processes that depend on genotype and environment simultaneously. This article analyzes grain yield and grain moisture for 976 F3 maize testcross progenies evaluated across 12 environments in the corn belt of the United States. The analysis was based on mixed models, incorporating both genotypic and environmental covariates. A majority of the detected QTLs showed significant QTL-by-environment interactions (QEI). Most QEI could be understood as a differential QTL expression conditional on longitude or year.

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Sex-determination pathway

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