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One hundred years into the study of ecotypes, new advances are being made through large-scale field experiments in perennial plant systems

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摘要	A hundred years after Turesson first clearly described how locally adaptive variation is distributed within species, plant biologists are making major breakthroughs in our understanding of mechanisms underlying adaptation from local populations to the scale of continents. Although the genetics of local adaptation has typically been studied in smaller reciprocal transplant experiments, it is now being evaluated with whole genomes in large-scale networks of common garden experiments with perennial switchgrass and poplar trees. These studies support the hypothesis that a complex combination of loci, both with and without adaptive trade-offs, underlies local adaptation and that hybridization and adaptive introgression play a key role in the evolution of these species. Future studies incorporating high-throughput phenotyping, gene expression, and modeling will be used to predict responses of these species to climate change.
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