

154. NGS for identifying wild-to-cultivated gene flow for African crops adaptation

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Negative effect of future climate changes on agriculture is a major concern for worldwide food security. Adapting local crops to future harsher conditions is one objective of sustainable development and breeding programs. This will be particularly challenging in Sub-Saharan Africa. To improve adaptability of crops and agrosystems, farmers are relying on agrobiodiversity. Although using genetic diversity from local varieties has proven to be an efficient strategy for improving crops adaptation, it is expected that wild relatives will carry adaptations to more extreme environmental stresses. Living in more extreme conditions and often presenting a larger diversity than cultivated crops, wild relatives represent an important and interesting reservoir of adaptations. Wild relatives have been used for crop improvement for resistance traits to biotic (pest, disease) or abiotic (drought, salinity, soil acidity) stresses in breeding programs. In traditional agrosystems, weedy types have been used when harsher conditions arise or to increase diversity of varieties. The availability of next generation sequencing (NGS) technologies opens the door to wide genomic information even for non-model plants. Genomes of wild populations can be used to identify genes and polymorphisms linked to adaptations to future climatic conditions. We will review the importance of wild-to-cultivated introgressions in local African crops and the new perspectives that NGS technologies allow to address.

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