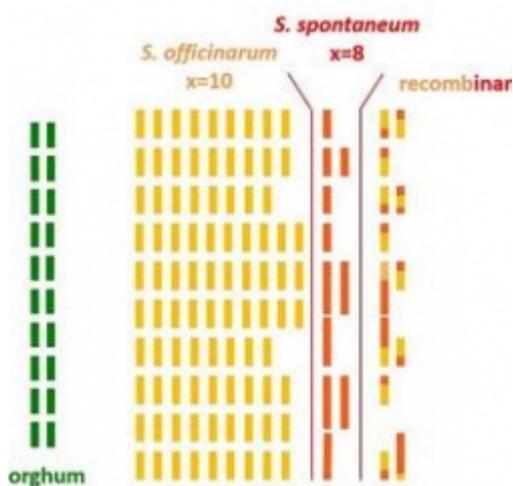


Sugarcane Genome Finally Gets Sequenced - 80 Percent Of The Sugar Market Rejoices

By ACSH Staff — August 12, 2018



Credit: CIRAD

The last major cultivated plant that didn't have its genome sequenced has finally gotten its day in the colinearity sun. The sugarcane genome has entered the modern molecular biology era.

The reasons it took so long were challenges with conventional sequencing techniques because the sugarcane genome is so complex. It has large numbers of copies of each chromosome category (high [polyploidy](#) [1]), varying numbers of copies depending on the chromosome category ([aneuploidy](#) [2]), structural differences and interspecific chromosome recombinants, and bispecific origin of the chromosomes.

The genome structures of sugarcane and sorghum are similar, they have parallelism, with numerous genes occurring in the same order. Using the sorghum genome as a template the researchers behind [the new study](#) [3] were able to take advantage of that colinearity to assemble and select the sugarcane chromosome fragments to sequence. "Thanks to this novel method, the reference sequence obtained for a cultivar from Réunion, R570, is very good quality," [says Angélique D'Hont](#) [4], a Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) geneticist who coordinated the study.

It's a major breakthrough. Almost 80% of the world's sugar comes from sugarcane but sugarcane cultivar breeding programs were restricted to old hybridization trial and error, followed by conventional, very cumbersome field assessments.

Sugarcane can now enter the modern world of molecular biology. That's sweet science.

Citation: Garsmeur Olivier, Droc Gaëtan, Antonise Rudie, Grimwood Jane, Potier Bernard, Aitken

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Links

[1] <https://www.nature.com/scitable/topicpage/polyploidy-1552814>

[2] <https://www.nature.com/scitable/definition/aneuploidy-aneuploid-162>

[3] <https://doi.org/10.1038/s41467-018-05051-5>

[4] <https://www.cirad.fr/en/news/all-news-items/press-releases/2018/sugarcane-genome-sequencing>