

International research team cracks sugarcane genome

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After years of arduous effort, scientists have mapped the genome of the sugarcane – a crop that produces 80 per cent of the world's sugar and has emerged as the primary crop for biofuel production. Because of its complex genetic make-up, it was one of the last crop plants to expose themselves to the tools of science.

A global team of researchers led by Angélique D'Hont of France's CIRAD mapped the sugarcane genome using a variety grown in the Réunion Islands.

The findings, reported in

the journal *Nature Communications* last week, will help scientists create a reference genome, which can be used to develop molecular tools to supplement conventional breeding methods.

Until now, sugarcane cultivar breeding programmes were restricted to hybridisation, followed by cumbersome field assessments. Sugarcane breeding can now enter the age of molecular biology.

Complex genome

The genome is so complex that classical sequencing approaches proved useless, said Olivier Garsmeur, a CIRAD re-

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searcher and lead author of the study.

"The sugarcane genome is nearly 20 times bigger than that of rice. While the rice genome could be sequenced about 15 years ago, the sugarcane genome proved a tough nut to crack," said G Hemaprabha, head-in-charge for crop improvement at the ICAR's Sugarcane Breeding



Institute in Coimbatore.

"We have identified around 25,000 sugarcane genes," Garsmeur told *BusinessLine*.

According to Hemaprabha, the newly acquired genomic information will help sugarcane breeders develop varieties as per their requirements. For example, they can breed varieties that can withstand

droughts, require lesser water or cultivars containing higher sucrose levels.

While many major institutes worldwide were involved in the research, India was not part of it. However, a private institute in Maharashtra – Vasantdada Sugar Institute – was part of a larger consortium sewn together by CIRAD. According to a scientist, India did not join the consortium because it had to make a hefty financial contribution.

However, Garsmeur said all countries can "use the data produced in our study even if they are not part of the consortium."