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NRGene's big data technology to enable maize genome analysis

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NRGene and The International Maize and Wheat Improvement Centre (CIMMYT) are collaborating to generate the denovo genome assemblies of 20 tropical, subtropical, and highland maize genomes as part of CIMMYT's collaborative Seeds of Discovery project (SeeD).

CIMMYT is an international non-profit research and training center focusing on research and training that increases sustainable agricultural productivity to feed a growing world population and improve the lives and livelihoods of farmers throughout the developing world, including Africa, Asia and the Americas.

The collaboration is anticipated to augment the existing temperate reference for maize and significantly enhance molecular research and breeding for tropical agro-ecologies.

"Technology is the lynchpin to address the pressing need to grow the world's food supply," said Dr Gil Ronen, CEO, NRGene. "The speed at which NRGene's big data genomic analysis delivers results means that CIMMYT be able to quickly apply the information to its practical research."

Fifty percent of modern maize varieties grown in developing countries contain CIMMYT backgrounds.

The goal of the collaboration is to help CIMMYT and its partners to accelerate the development of diverse, high yielding, nutritious maize that is better able to withstand infertile soils, drought, pests, and diseases.

NRGene's GenoMAGICTM and DeNovoMAGICTM use unique algorithms to compile and analyze genomic big data at unprecedented speeds and accuracy.

The results of the genomic analysis will allow CIMMYT to understand the exact genetic basis of variation in complex traits and later develop maize lines providing heartier yields.

"We're constantly confronted by the challenges of sustainably increasing the productivity and profitability of maize production, especially in resource-limited tropical environments," said Dr Sarah Hearne, leader of SeeD's maize component, CIMMYT. "Maize is an increasingly essential crop, and we need tools that enhance our effectiveness in using the genetic resources stored in our gene banks to address the challenges of climate change and growing consumer demand for more nutritious foods. The DeNovoMAGIC analysis will give us some broad markers as to how to direct our R&D efforts."