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## Genomics approaching value added varieties with high efficiency bioethanol making in cassava (*Manihot esculenta* Crantz)

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Cassava (*Manihot esculenta* Crantz) is a vital important crop in the world because of its multiple utilization in food, feed, biofuel and green chemical materials in present and in the future. However, desirable elite varieties satisfied to food and industrial purpose still are bottlenecks in the field. We all know that the conventional breeding faced the big challenges due to the extremely heterozygosity of genome and too high cost to selection scale. How to pave a way towards to low-cost and high-throughput genotype selection will be an ideal blue map. Recent five years, our consortium made breakthroughs in several aspects like invented and patented a low cost and high throughput genotyping tool called the amplified fragment single nucleotide polymorphism and methylation-AFSM technology. It allows finding the SNV and methylation sites in whole genome level with very low cost and short time. Gained genotype information of over 800 cultivars and landraces of cassava including about 40 breeding parents. Main economical traits such as fresh root yield, dry matter yield, storage root quality, plant and leave types, tolerance to drought, cold and post-harvest physiological deterioration (PPD) tolerance to barren soil, whose correlated whole genome markers have been screened and produced a set of detectable breeding sites. A framework of genome selection breeding in cassava has been set up and based on it, several new elite varieties with characters of high yield, higher ethanol productivity, with erect plant type, tight and short storage root suitable for high dense planting and mechanic harvesting, tolerance to PPD and cold have been released.

### Biography

Wenquan Wang is a Senior Scientist of Genomics and Molecular Breeding for tropical crops as cassava, Professor of Biology and Agronomy in Hainan University, Huazhong Agricultural University, Executive Director of Key Laboratory of Tropical Crop Biology and Utilization of Genetic Resources. He is a Coordinator of National Key Basic Research Program (973) "The principal research on genetic improvement in cassava important tropical crop". He got PhD in nutrition genetics in Chinese Agricultural University in 2000, and once being Senior Research Fellow in BTI, Cornell University during 2009-2010. In his academic career, dedicated to understanding molecular mechanism of carbohydrates accumulation in storage roots, developing new molecular tools to build up a whole genome resolution for elite varieties breeding in cassava and other tropical crops. The achievements include one third prize in National Science and Technology Innovation Award and two prizes of Provincial Scientific and Technology Award, two patents and above 200 publications include of articles published in Nature Comm., NAR, Scientific Reports, etc.

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