



# Oil Palm Planting Materials

**Powered by Artificial Intelligence &  
Genomics Technologies**

The Right Seed at  
the Right Location with  
the Right Practices

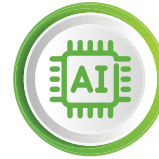
## GT-9 Seeds



High  
Yield



High  
Precocity

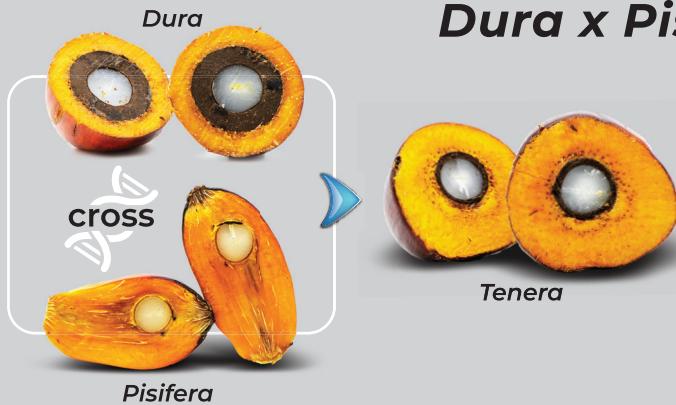


AI-optimised  
Performance



Genomics-driven  
Seed Technology

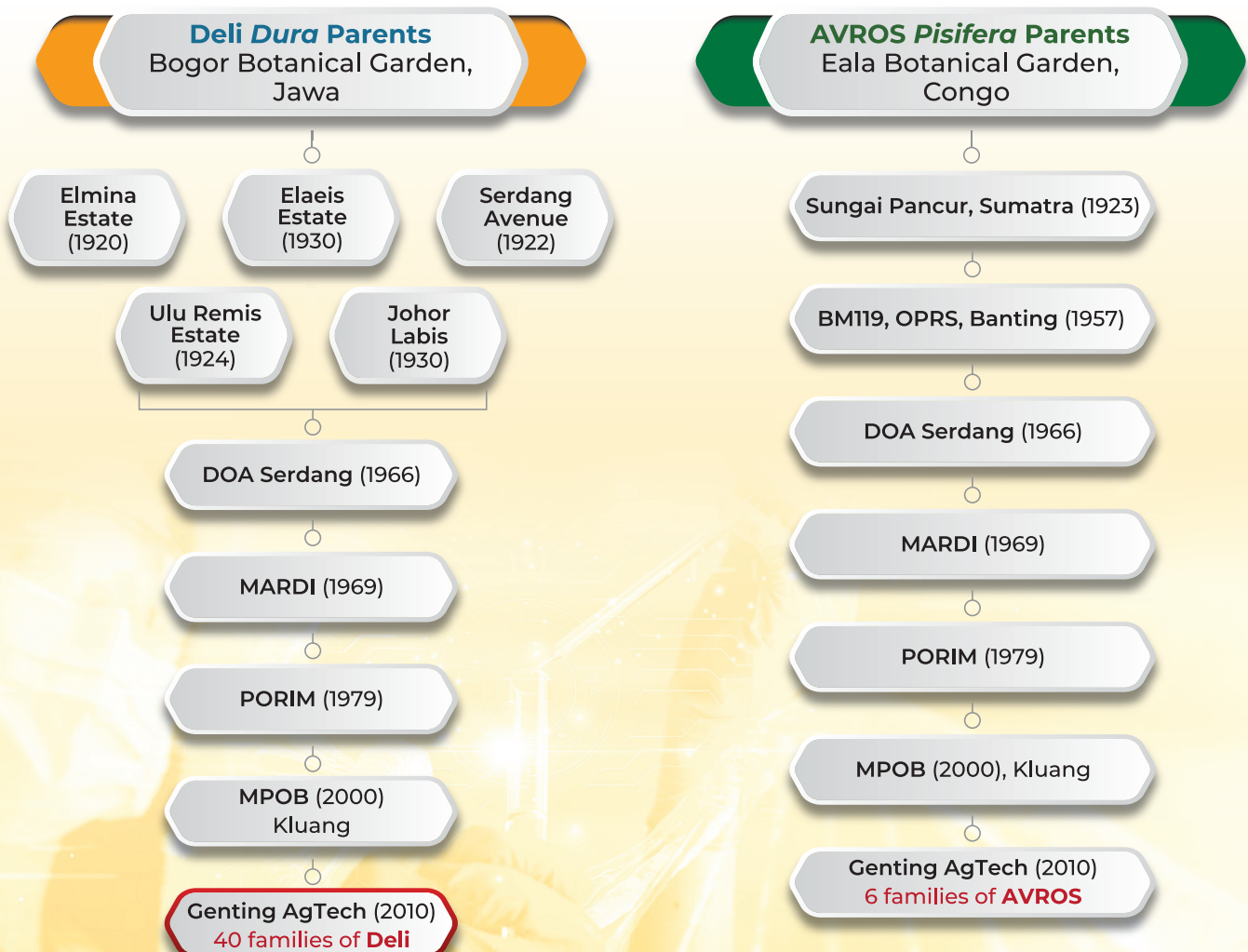
Unique Characteristics



## *Dura x Pisifera (DxP)*

GT-9 is the cross between Deli *dura* and AVROS *pisifera*. Deli *dura* has good bunch yield and fruit set while AVROS *pisifera* has high bunch number and high oil content in the bunch. This has made the Deli x AVROS the best combination for high oil yield DxP.

## Pedigree of Breeding Programme

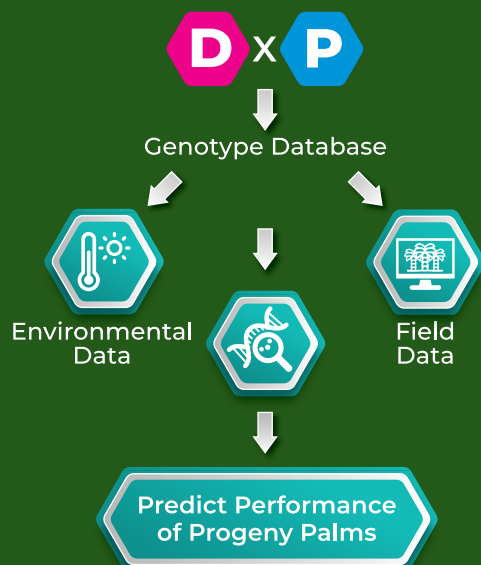


Our seed production journey began from the high quality germplasm provided by MPOB for both *dura* and *pisifera*. By leveraging on DNA marker technology, ACGT had identified the most compatible crossing of parental palms and minimise the time required for conventional breeding through *in silico* Progeny Testing (ISPT).



# Inventive & Sustainable AI-based Breeding for Planting Material

## Technology Overview



## The Challenges in Breeding

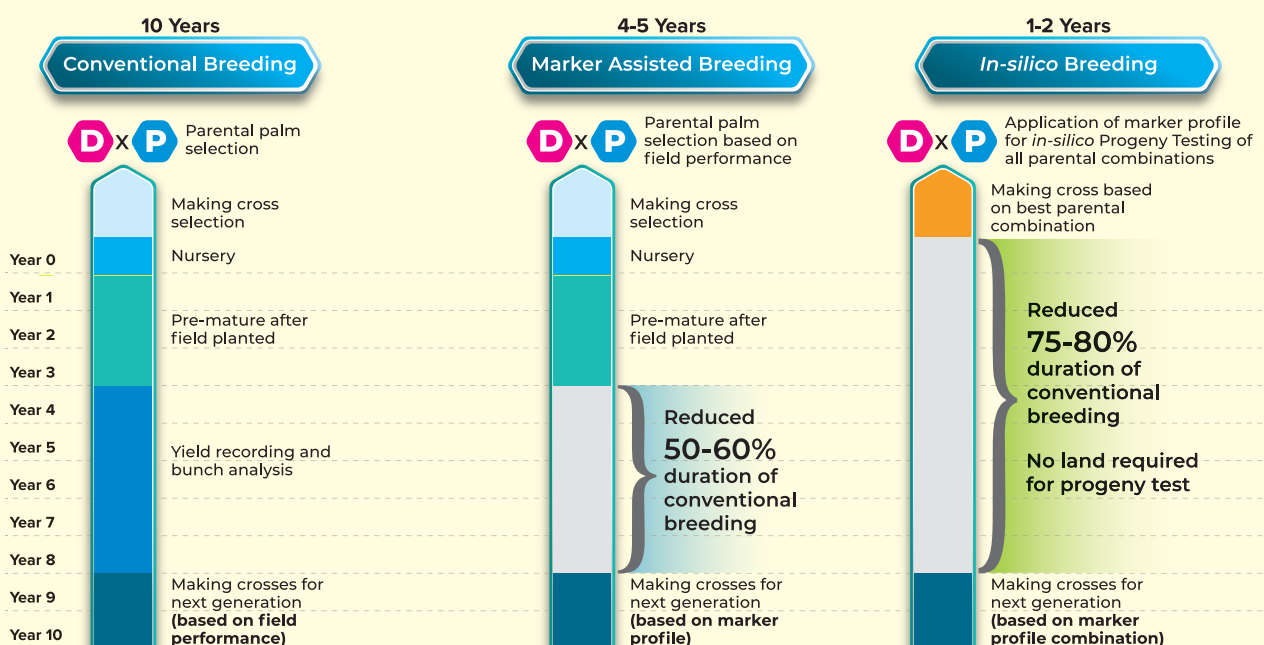
- Intensive field testing of DxP crosses is required to understand the combining ability between both dura (maternal) and pisifera (paternal) palms
- It is not economically viable to assess all the DxP combinations of each generation in the field as each progeny test requires at least 8-10 years to complete
- Thus, breeders only discover a fraction of top performing crosses in each generation

## ACGT developed *in silico* Progeny Testing (ISPT) to unlock the challenge

- ISPT was built based on the strong foundation in breeding, genomics and data science in AI modeling
- More than half a million of DxP crosses were simulated to identify elite crosses on targeted traits for breeding and seed production
- ISPT fast-tracks and prioritises the breeding lines with greatest potential for breeding directions

# Revolutionising Oil Palm Breeding Programme & Seed Production

## Accelerate Time-to-Market of SUPERIOR PLANTING MATERIALS



## Realising the Optimal Genetic Potential

High-Throughput Genotyping Platform is commissioned since 2014 with the capacity of 50 million data points per year

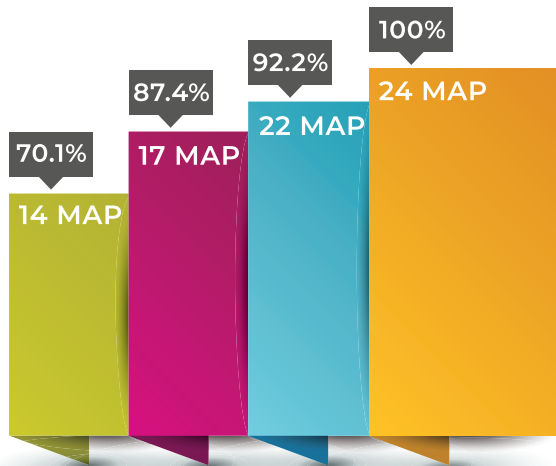
Impactful DNA markers are deployed to perform

- Genetic purity QC on each seed lot to ensure legitimate DxP seeds are dispatch to customers
- Marker-assisted selection for targeted traits
- Genetic diversity assessment

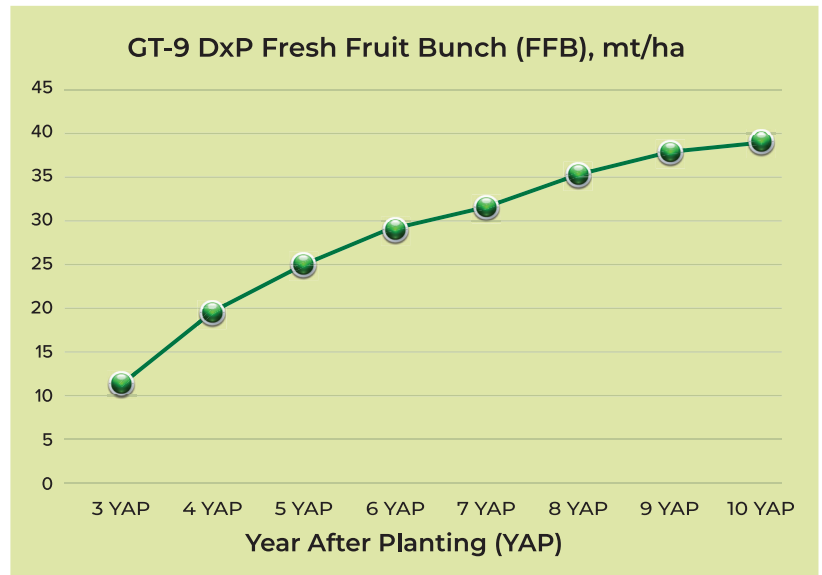


# High Precocity Characteristic to Hasten Return on Investment (ROI)

Percentage of Palms Flowered



High precocity traits of GT-9 had shown early palms flowering with more than 90% of palms flowered at 22 Month After Planting (MAP).



Characteristics	SIRIM MS157:2017 <i>Dura</i> Mother Palms Specifications	SIRIM MS157:2017 Progeny Test Palms Specifications	GT-9 DXP
Fresh Fruit Bunch (FFB)	≥150 kg/palm/year (22.2 mt/ha/year, 148 SPH)	≥170 kg/palm/year (25.2 mt/ha/year, 148 SPH)	≥225 kg/palm/year (33.3 mt/ha/year, 148 SPH)
Oil-to-bunch ratio	≥19%	≥25%	≥28%
Kernel-to-bunch ratio	-	≥3%	≥3%
Oil Yield	-	≥42.5 kg/ palm/year (6.29 mt/ha)	≥63.0 kg/palm/year (9.32 mt/ha)

**48%**  
Higher than  
SIRIM MS157:2017