MOLECULAR PLANT

Location module

W

Crossing nursery

Genetic variation analysis module

Genomic statistical analysis module
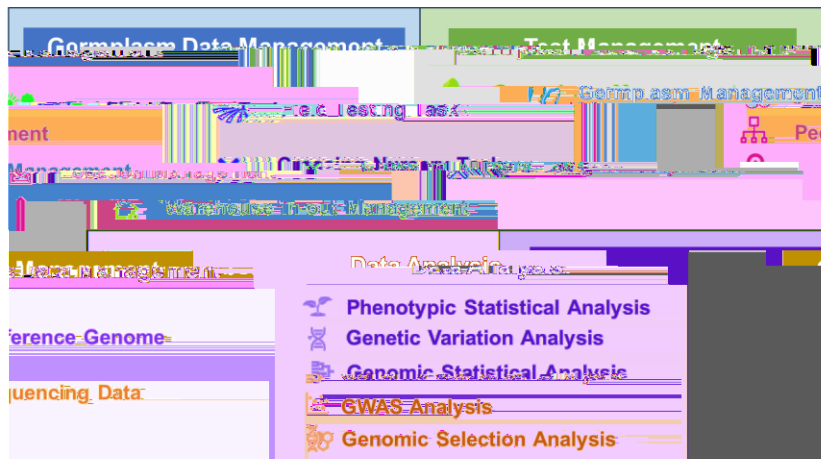
F

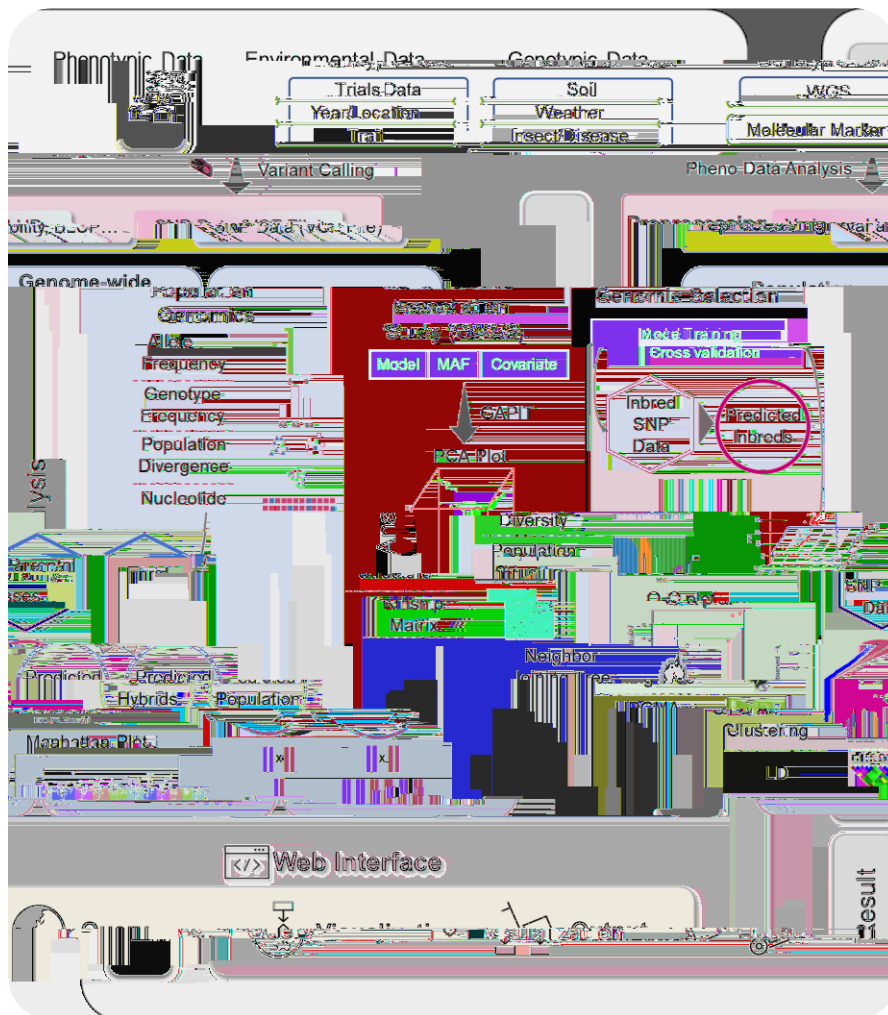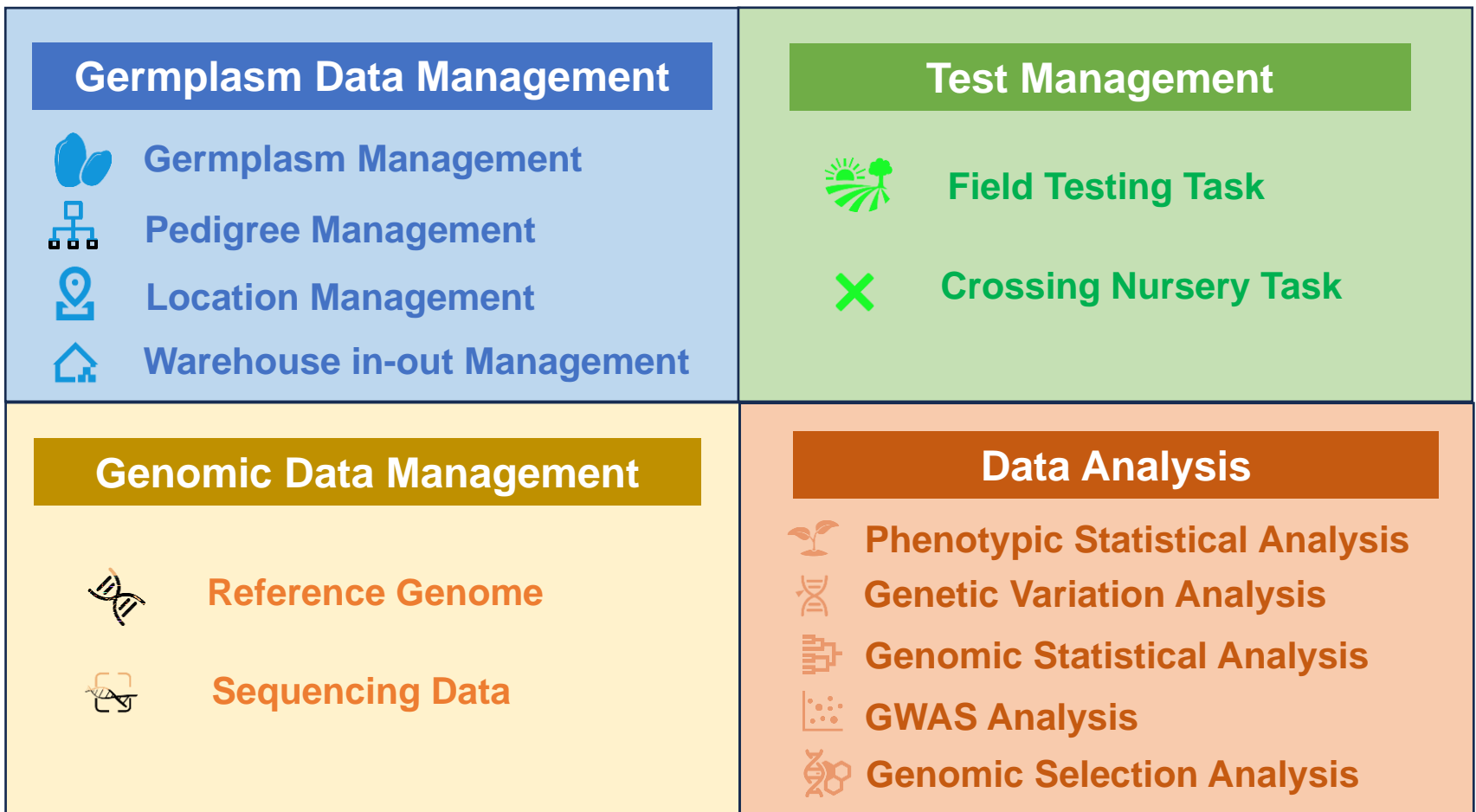*GWAS analysis module*

p

Genomic selection analysis module

A

B

Funding

Acknowledgements

References

Germplasm Data Management

- Germplasm Management
- Pedigree Management
- Location Management
- Warehouse in-out Management

Test Management

- Field Testing Task
- Crossing Nursery Task

Genomic Data Management

- Reference Genome
- Sequencing Data

Data Analysis

- Phenotypic Statistical Analysis
- Genetic Variation Analysis
- Genomic Statistical Analysis
- GWAS Analysis
- Genomic Selection Analysis

B

Raw Data

Phenotypic Data
| Trials Data |
| Year/Location |
| Trait |

Environmental Data
| Soil |
| Weather |
| Insect/Disease |

Genotypic Data
| WGS |
| Molecular Marker |

Pheno Data Analysis

Variant Calling

Preprocessing | Variance, Heritability, | | SNP Data (VCF File) |

Analysis

Population Genomics

Allele Frequency

Genotype Frequency

Population Divergence

Nucleotide Diversity

Population Structure

Kinship Matrix

Neighbor Joining Tree

UPGMA Clustering

LD

Genome-wide Association Study (GWAS)

| Model | MAF | Covariate |

GAPIT

PCA Plot

Q-Q plot

Manhattan Plot

Genomic Selection

Model Training Cross validation

Inbred SNP Data → Predicted Inbreds

Parental SNP Data | Hybrid Crosses

Predicted Hybrids | Predicted Population

Web Interface

Result

Query | Visualization | Output