GENOTYPE × ENVIRONMENT INTERACTION AND YIELD STABILITY OF UiTM ADVANCED RICE LINES

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INTRODUCTION

OVERVIEW

- Eleven rice genotypes (five UiTM mutant lines and six commercial varieties) were tested at 12 locations in Malaysia to evaluate yield, stability, and adaptability.

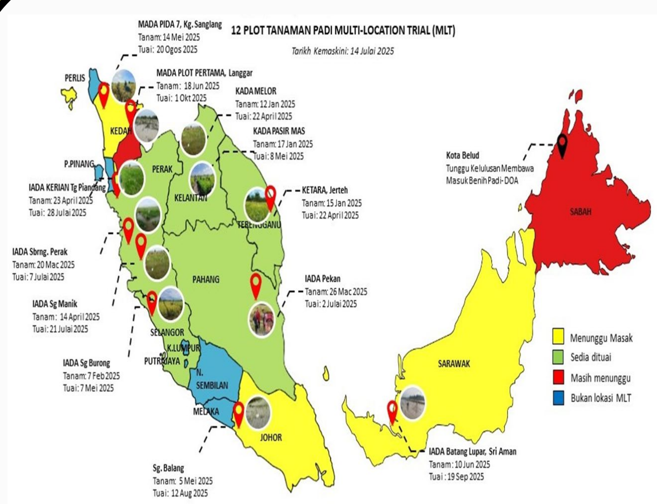
MAIN RESULTS:

- Significant effects ($p < 0.001$) of genotype, environment, and G×E on most traits.
- Genotype differences strong for flowering time, maturity, filled spikelet's, and yield.
- Environment mainly influenced plant height and spikelet number.
- G×E interaction showed that some lines performed differently across sites.
- UiTM mutant lines had stable yield and flowering, showing good adaptability.
- High variation in sterile spikelet's and yield traits reflects environmental influence.
- Yield traits (filled spikelet's, 1000-seed weight) were strongly correlated — key for selection.

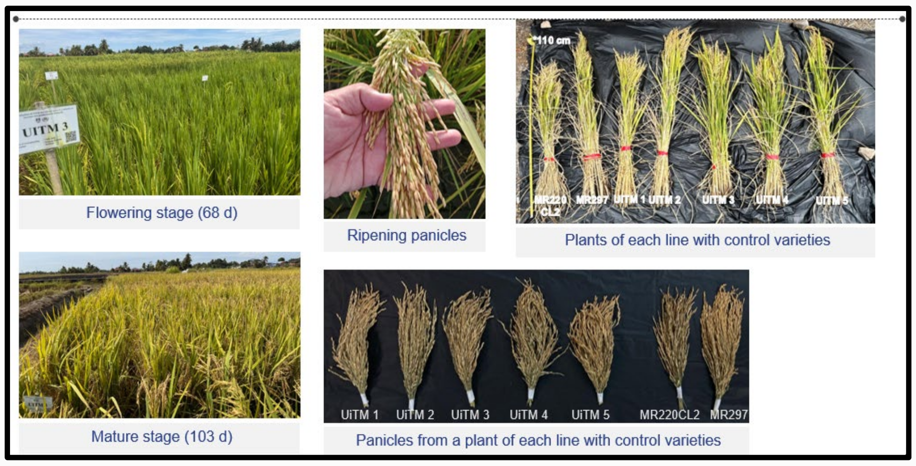
MULTIVARIATE ANALYSIS:

- PCA: Yield traits explained most variation.
- Cluster: Two groups – early, high-yielding lines vs. late, high-spikelet types.

METHODOLOGY



RESULTS



Flowering stage (68 d)
Ripening panicles
Plants of each line with control varieties
Mature stage (103 d)
Panicles from a plant of each line with control varieties

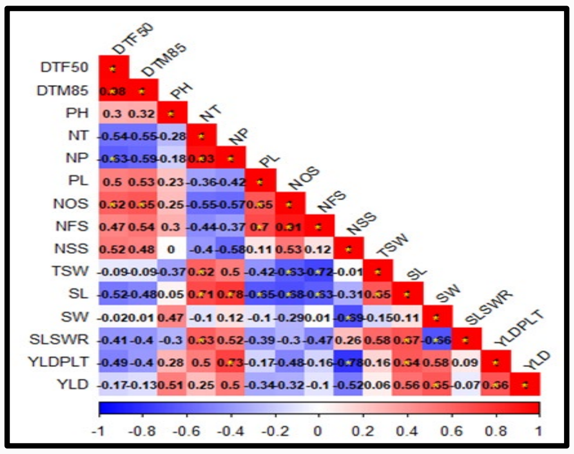


Figure 1: Pearson Correlation study

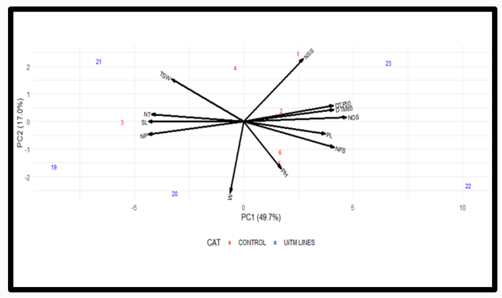


Figure 2: PCA biplot of the 10 genotypes evaluated

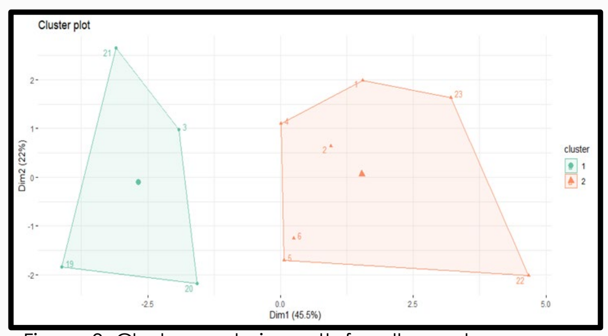


Figure 3: Cluster analysis results for all genotypes

CONCLUSION

UiTM mutant lines showed stable, high yields under diverse conditions; strong candidates for climate-resilient rice in Malaysia.

ACKNOWLEDGMENT

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