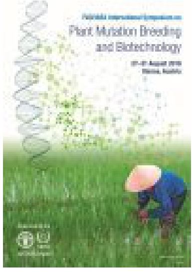

Contribution ID: **145** Type: **Poster**

ASSOCIATION MAPPING FOR MORPHOLOGICAL AND GRAIN QUALITY TRAITS IN RICE WHITE PONNI MUTANTS

Background:
Improved White Ponni (IWP), a tall and medium duration rice variety is famous for its superior grain qualities. However, the variety is susceptible to lodging and takes long duration for maturity. In this study, twenty M6 generation of IWP mutants primarily developed for semi-dwarfism and early maturity were assessed for the level of morphological and molecular variability. Possible marker-trait associations were studied using 53 SSR markers.
Methodology:
The twenty IWP mutant lines and WP-Control plants were assessedfor morphological variability and grain quality assessments. Fifty three SSR markers were utilised for assessment of molecular variations and tree construction.Marker-trait associations were studied using STRUCTURE 2.3 and TASSEL 2.0.1.
Results:
Significant reduction in plant height (upto 63.4 cm) and days to fifty per cent flowering (upto 13 days) was observed among the mutants. Significant increase in single plant yield than WP-Control was observed in 13 mutants. WP_15-5 recorded highest single plant yield of 59.44 g. Fifty three SSR markers revealed variations which were consistent with morphological observations. The phylogenetic tree showed two prominent branches, which separated WP-Control and the semi-dwarf and early maturing mutants.
The population structure analysis using STRUCTURE extracted four clusters (optimum K = 4).
Conclusion:
The IWP mutants studied here showed potential divergence both at morphological and genetic levels. WP_15-5, WP_16-1, WP_16-2, WP_22-2, WP_23-3 and WP_6-3 are promising mutants with high yield, semi-dwarfism and earliness with grain quality characters equivalent to WP-Control.

Fig A: Comparison between WP-Control and WP_22-2, a high yielding, semi-dwarf and early maturing mutant

Fig B: Phylogenetic tree constructed based on SSR markers

Country or International Organization

INDIA

Authors: Mr PETER, Andrew (Tamil Nadu Agricultural University); Dr PILLAI, Arumugam (TNAU)

Co-authors: Dr S, Ramchander (Tamil Nadu Agricultural University); Dr J, Souframanien (BARC)

Presenter: Dr PILLAI, Arumugam (TNAU)

Track Classification: New challenges and technologies in plant genomics and breeding