Entry No. IRRC-0302

Category	: International Rice Research Conference
Select Theme	: Genetic improvement
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Keyword 1	: Genotype x Environment Interactions
Keyword 2	: Pre-breeding
Keyword 3	:
Title of Entry	: Genotype X Environment Interaction of Yield Traits in Introgression Lines Derived from indica/tropical japonica in Rice
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: The quantum jump in the rice yield potential has mainly resulted from modification of plant type. Rice yield potential in irrigated ecosystem has not significantly increased since the green revolution though there has been major improvement with respect to quality, disease and pest resistance. The narrow genetic base of the materials is one of the reasons for slow progress. To further enhance the genetic potential of rice from its present level, modification of the present plant type is needed by broadening the genetic base of indica cultivars with introgression of trait from tropical japonica. Twenty nine introgression lines (ILs) derived from indica/tropical japonica two way and back crosses along with elite cultivars ‘Swarna’, ‘Gontrabidhan’, ‘MTU1010’ and ‘BPT5204’ were evaluated for yield traits during Rabi 2017 at IIRR, Hyderabad (E1) and at two locations in Kharif 2017 at IIRR, Hyderabad (E2) and Kampasagar (E3); assessed for photosynthetic use efficiency and grain quality traits. As per AMMI biplot model and GGE biplot model, the IL631-1 derived from Swarna*2/IRGC4105 was identified as the best genotype across all three environments followed by 624-3, 613-3 and 624-6 from Swarna/IRGC63248//DSB3 and 687-2 from Swarna/IRGC63248//Swarna sub 1 and 677-1 from Swarna/IRGC19922//MTU 1081. All these lines showed high stability with higher grain yield. As per GGE biplot analysis, 617-1 was found best suited for E1 and E3. The lines 624-3 and 613-3 were found better adapted to E2. Four lines, 631-1, 613-3, 624-3 and 624-6 were found significantly better than the checks Swarna, BPT5204, Gontrabhidhan and MTU1010 in pair-wise mean comparisons across the environments. Leaf photosynthetic rate was highest (23.35 µmol/m2.s) in the best genotype 631-1 followed by Gontrabidhan (21.91µmol/m2.s). Among the five best high yielding stable genotypes, preferred grain quality traits of Indian palate like high

head rice recovery (HRR) and intermediate amylose content (AC) were observed in 631-1 and high HRR and low AC preferred in North Eastern India were observed in 624-3. Thus, the stable high yielding lines with indica background identified in the present study serve the purpose of introgression of high yielding traits from tropical japonica retaining indica grain quality.

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