

Category	: International Rice Research Conference
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Keyword 1	: Abiotic stress tolerance
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Keyword 3	: Selection accuracy
Title of Entry	: Selection of Doubled-haploid Rice Lines Adaptive to Salinity Stress through Multivariate Analysis Approach
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Area affected by sea water intrusion needs adaptive lines to salinity stress. Doubled-haploid plant technology is among technology to speed up the obtainment of new lines in rice. The technology requires support to predict line adaptability to salinity stress. One promising approach to improve selection effectiveness is through multivariate analysis. The current study use the multivariate analysis to select the doubled-haploid rice lines adaptive to salinity stress. Determination of adaptive lines to salinity stress was done by two approaches. The first approach was the selection of good agronomic traits through an experiment conducted at Sawah Baru IPB Field, Bogor with randomized complete block design (RCBD). The second approach was the screening of salinity tolerance through hydroponic cultures conducted at BB Biogen Greenhouse, Bogor with RCBD nested factorial design. Genotypes were nested in NaCl concentrations (0 mM and 120 mM). Both experiments used 56 doubled-haploid lines and 4 check varieties (Ciherang, Inpara 5, Inpari 29, Inpari 34 Salin Agritan) with 3 replications. In the second experiment, Pokkali and IR29 varieties were also added as tolerant and sensitive check to salinity. The first experiment showed that productive tillers and number of filled grains were secondary characters which could be paired with productivity variable in selection indices. Both characters were determined by Pearson correlation analysis, path analysis, and step-wise multivariate regression. Weighted selection index was based on the eigenvector of principal component analysis, focussed on components influenced by productivity. The result of index selection showed that 24 doubled-haploid lines had good agronomic traits. The second experiment showed that the relative decrease of height and fresh weight of shoot were the important characters in salinity tolerance screening. Determination of both characters was based

on interaction variance and Spearman correlation to tolerance score. Both characters became the basis for determining tolerance selection indices through discriminant analysis combined with standardized score values. The results showed that 34 doubled-haploid lines had good tolerance to salinity. Result of experiments 1 and 2 were combined for composite selection index. The results of the composite index indicated that 28 genotypes were potentially adaptive to salinity stress.

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