

Category	: International Rice Research Conference
Select Theme	: Genetic improvement
Endorsement email	:
Keyword 1	: Pre-breeding
Keyword 2	: Abiotic stress tolerance
Keyword 3	: Genotype x Environment Interactions
Title of Entry	: Application of CSM–CERES–Rice in Selection of Upland Rice Genotypes for Drought Tolerance
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Drought is the common adverse environmental factor that can truly cause reduction in upland rice yields. The objectives of this research were to select drought tolerant genotypes and to explore the potential of crop simulation model-CERES–Rice for its use as a decision support tool (DST) in genotypic selection process. Two experiments named as potential experiment (1) for model calibration under optimum conditions and an experiment for yield assessment (2) with 3 irrigation treatments of 100 % field capacity (FC) (T1), 70 % FC (T2) and 50 % FC (T3) were conducted. Irrigation treatments T1, T2 and T3 were applied in yield assessment experiment at 60 days after planting (DAP) and irrigation was stopped for 6 days to induce water stress for T2 and T3, following that treatments were resumed until maturity. Results from yield assessment experiment for drought susceptibility index (DSI) and relative yield (RY) indicated that genotypes Khao/ Sai, Dawk Kham, Dawk Pa-yawm, Goo Meuang Luang and Mai Tahk under T2 and Dawk Kha, Khao/ Sai, Nual Hawm, Dawk Pa-yawm and Bow Leb Nahag under T3 were among top five drought resistant as well as high yielding genotypes. Simulations exhibited that, model was efficiently able to simulate yield for all treatments as the normalized root mean square error (RMSEn) less than 10 % for grain yield (GY) was observed. Simulated drought stress indices and water use efficiency (WUE) indicated that selected drought resistant and high yielding genotypes had lower values for stress indices and an increasing trend in their WUE under stress conditions. Therefore promising genotypes selected from T2 and T3 were finally

selected and recommended for further study. Results supported the idea that model could be used as a DST in genotypic selection process for drought tolerance in rice crop breeding program.

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