

## [P4] Crop Genetics and Physiology

Thu. Sep 9, 2021 12:15 PM - 2:00 PM Room 4 (Poster) (Crop Genetics and Physiology)

12:15 PM - 1:00 PM

### [P4-27] Analysis of Genotype and Environment Interaction, and the Response of Grain Yield of Lowland Rice (*Oryza sativa* L.) to Nitrogen Application Under Different Environment in the Philippines

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Philippines rice growing areas have different climatic and edaphic characteristics resulting to difference in the performances of rice genotypes across different regions. Grain yield of rice (*Oryza sativa* L.) varies across genotypes and environments caused by genotype by environment (GxE) interactions, which is further affected by management (GxE<sub>M</sub>). Analysis of these interactions helps in the identification of genotypes with high stability, most adaptable environment, and the most suitable management. In this study, three rice genotypes namely: PSB Rc18, NSIC Rc222 and NSIC Rc202H were planted with and without nitrogen fertilizer application in 14 different environments which included all the dry seasons (DS) and wet seasons (WS) of Bukidnon, North Cotabato, Davao Del Sur, Isabela, Laguna, Oriental Mindoro, and Nueva Ecija. Environment accounted for the largest variability in grain yield (72.3%), followed by the genotype (25.3%) and their interaction (2.3%). Among the environments, dry season of Nueva Ecija with N fertilizer application had the highest mean grain yield (5.9 t ha<sup>-1</sup>), while wet season of North Cotabato with zero N fertilizer application had the lowest mean grain yield (2.13 t ha<sup>-1</sup>). The response of the genotypes across all environment also varied. Among the genotypes, NSIC Rc202H had the highest increase in yield as response to N application in DS Nueva Ecija compared to the other environments. This shows that variation of grain yield and yield response is affected by genotype, environment and management (GxE<sub>M</sub>).