

Category	: International Rice Research Conference
Select Theme	: Disruptive technologies and innovations
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Keyword 1	:
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Title of Entry	: Evaluation of the impact of mechanization on genotype x management effects and correlated response to selection in an irrigated lowland inbred rice breeding program
Presenting author	: Partha Biswas
Presenting author email	: p.s.biswas@irri.org
Co author 1	: Princess L. Dela Cruz, Vitaliano Lopena, Teodoro Correa Jr, James Quilty, Steve Klassen, Jessica E. Rutkoski, Joshua N Cobb
Co author 2	:
Affiliation presenting author	: International Rice Research Institute, Los Banos, Laguna, Philippines
Affiliation 1	:
Affiliation 2	:
Select only one type of presentation	: 15 minute oral presentation
Abstract	: Rice cultivation is a labor intensive venture. Manual transplanting increases cost of cultivation as labor costs have risen dramatically in recent years. Mechanical transplanting and direct seeding might help reduce cost of testing within a breeding program. However, effect of these crop establishment methods on the performance of breeding lines under manually transplanted farmer management is not well understood. Additionally, aerial phenotyping methods could further reduce costs by automating the collection of phenotype data that is traditionally recorded by hand. In this study we investigated the relationships between precision phenotyping and crop establishment methods and their impact on relevant breeding metrics in elite breeding germplasm. The aim is to provide data driven recommendations to replace traditional crop establishment and data recording techniques with cheaper and potentially more accurate alternatives. Yield trials containing 150 elite breeding lines in two distinct environments at IRRI HQ were conducted using three different crop establishment methods (manual transplanting, mechanical transplanting and direct seeding). We recorded yield, flowering, stand count, and plant height through conventional methods and estimated these metrics using data collected from drone based phenotyping. The effects of crop establishment on the ranks of the yield BLUPs and the correlations of drone based phenotype data with manually collected methods will be presented.

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