

# Does poor maternal phosphorus nutrition affect progeny growth and root traits in common bean?

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## ABSTRACT

Low soil phosphorus is a primary constraint to crop production, especially in developing nations. My lab has identified traits beneficial for phosphorus acquisition, aiding the development of genotypes with better performance in low phosphorus. These genotypes have been tested for performance under low phosphorus conditions, but performance of the following generation has not been tested. Since farmers in developing nations collect seed for the next year's crop from mother plants grown in low phosphorus, it is important to understand how progeny from a low phosphorus maternal environment perform in low phosphorus relative to mother plants. This study investigates the impact of a low phosphorus maternal environment on progeny growth and root traits. I hypothesize that maternal nutrition will impact progeny of phosphorus stressed parents, resulting in enhanced root responses to phosphorus availability. Greenhouse and field experiments will be used to evaluate traits, particularly root traits beneficial for phosphorus acquisition, in progeny from maternal plants grown in low and high phosphorus, when progeny are grown in low and high phosphorus conditions. Results from this study will improve food security in developing nations by improving selection of genotypes that thrive in nutrient deprived soils in both current and subsequent generations.