

## The role of chickpea (*Cicer arietinum L.*) landraces for improving phosphorus uptake and use efficiency in a tropical highland environment: What does Ethiopia have to offer?

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Breeding chickpea (*Cicer arietinum L.*) genotypes for favorable plant-nutrient relation has a considerable economic and ecological significance. Even though Ethiopia is known as one of the centers of secondary diversity for chickpea, information on the role of these genetic resources for improving phosphorus uptake and use efficiency is limited. One hundred fifty-five chickpea germplasm were evaluated in 2009/10 at Ambo and Ginchi, Ethiopia. A randomized complete block design was employed. Data on plant tissue phosphorus contents and related parameters were collected. Genotype by phosphorus level and phosphorus by location interaction effects were non-significant except in a few cases while their three way interaction effects were entirely non-significant. A number of accessions better performing over the improved genotypes were identified for phosphorus uptake and use efficiency. The application of phosphorus improved a number of characters. The comparison of the whole set of genotypes grown without phosphorus showed relative yield reductions of 15-17% or, on average, 16% as compared to the same genotypes grown with phosphorus fertilizer. Landraces superior to improved genotypes were identified for phosphorus use uptake and efficiency characters. The result suggested possibilities for identification of chickpea genotypes superior to varieties released so far and justifies the need for the initiation of a planned breeding program in order to exploit the wealth of genetic variation available among the Ethiopian gene pool in order to improve P use efficiency and reduce dependency on commercial fertilizers.

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