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Shuttle breeding results in drought-tolerant common bean germplasm release

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Drought experiments conducted at the Mitchell Ag Lab in Nebraska in 2018. Photo by Eduardo Valentin Cruzado.

Drought is the single largest constraint to common bean (*Phaseolus vulgaris* L.) production worldwide and is expected to become more prevalent as temperatures increase and precipitation patterns change. Thus, breeding for drought tolerance in conjunction with resistance to multiple diseases is a vital breeding strategy for improving climate resilience in common bean.

In a *Journal of Plant Registrations* article, researchers in Nebraska and Puerto Rico report two germplasm releases resulting from an ongoing shuttle-breeding program that focuses on identifying unique germplasm with abiotic stress tolerance and introgressing those traits into important common bean market classes to increase their drought tolerance and genetic diversity.

These new germplasm lines (pinto SB-DT2 and small red SB-DT3) are promising sources of drought tolerance based on their high yield, upright architecture (suitable for mechanized harvesting), and broad adaptation to temperate and tropical environments. Both SB-DT2 and SB-DT3 showed resistance to endemic strains of the rust pathogen, and SB-DT2 showed resistance to bean common mosaic virus.

These germplasm lines can be used in common bean-breeding programs to introgress novel drought tolerance into pinto (SB-DT2) and small red (SB-DT3) market classes to improve their climate resilience.

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Urrea, C.A., Smith, J.R., & Porch, T. G. (2021). Release of drought-tolerant pinto SB-DT2 and small red SB-DT3 common bean germplasm from a shuttle breeding

program between Nebraska and Puerto Rico. *Journal of Plant Registrations*.

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