Sorghum Diversity for Germination and Emergence under Cool Conditions. (C02-payne165145-Poster)

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Abstract:

In the Great Plains and other regions where sorghum is grown, temperatures are sub-optimal during at least part of the growing cycle. When cool temperatures occur during the early part of the growth cycle, poor germination, slow growth, and poor stand establishment result. Agronomic benefits from improved seedling cold tolerance in sorghum would include rapid and uniform germination, improved stand establishment, earlier planting, faster development, and expansion of sorghum into cooler regions. We evaluated germination and emergence of 49 sorghum entries with diverse genetic backgrounds. Wide genetic diversity existed for temperature base for germination, which ranged from 5 to 12 degrees C. However, temperature base for emergence was much narrower. Emergence rate as a function of temperature was related to germination rate in a curvilinear fashion, but data were highly heteroscedastic. Rankings among genotypes for germination rate were independent of those for emergence rate. There was wide genetic variability for emergence and germination rates at temperatures less than 20 degrees C. In general, cultivars from highlands of Africa, especially Ethiopia, were the most cool-tolerant.

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