



RESOURCE

Resilience of soybean cultivars to drought stress during flowering and early-seed setting stages

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Description / Abstract

Drought stress during the reproductive stage and declining soybean yield potential raise concerns about yield loss and economic return. In this study, ten cultivars were characterized for 20 traits to identify reproductive stage (R1-R6) drought-tolerant soybean. Drought stress resulted in a marked reduction (17%) in pollen germination. The reduced stomatal conductance coupled with high canopy temperature resulted in reduced seed number (45%) and seed weight (35%). Drought stress followed by rehydration increased the hundred seed weight at the compensation of seed number. Further, soybean oil decreased, protein increased, and cultivars responded differently under drought compared to control. In general, cultivars with high tolerance scores for yield displayed lower tolerance scores for quality content and vice versa. Among ten cultivars, LS5009XS and G4620RX showed maximum stress tolerance scores for seed number and seed weight. The observed variability in leaf reflectance properties and their relationship with physiological or yield components suggested that leaf-level sensing information can be used for differentiating drought-sensitive soybean cultivars from tolerant ones. The study led to the identification of drought-resilient cultivars/promising traits which can be exploited in breeding to develop multi-stress tolerant cultivars.

Publication year

2023

Publisher

scientific reports

Language English

Source URL:

<https://beta.toolbox.venthic.com/resource/resilience-soybean-cultivars-drought-stress-during-flowering-and-early-seed-setting-stages>