198. Genomics of Energy Sorghum's Water Use Efficiency/Drought Resilience

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Project Goals/Description: The overall goal of the proposed research, funded through Plant Feedstock Genomics for Bioenergy, is to increase the water use efficiency, drought resilience, and yield of high biomass energy sorghum and other C4 bioenergy grasses. Energy sorghum hybrids have been developed that have high biomass yield, excellent greenhouse gas displacement values, and good nitrogen use efficiency (1, 2, 3). Further increases in biomass yield will require the development of energy sorghum with improved water use efficiency, root systems with excellent water extraction properties and drought resilience. This goal will be accomplished by carrying out the following research objectives: (i) identify traits and molecular responses that improve the water use efficiency and drought resilience of energy sorghum using root-trait lysimeters and field analysis, (ii) characterize the genetic basis of variation in water use efficiency and drought resilience using the energy sorghum association panel and RIL populations, and (iii) test the utility of traits that modulate water use efficiency and drought resilience in energy sorghum hybrids through marker-assisted breeding.

References

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