



Responses of Sorghum [*Sorghum bicolor* (L.) Moench] to Static and Dynamic Drought Conditions



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Introduction

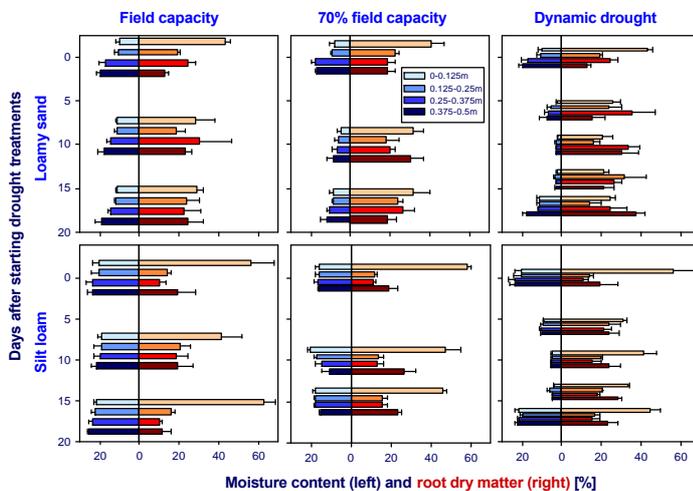
Sorghum [*Sorghum bicolor* (L.) Moench], grown extensively in the dry parts of the tropics, is reputedly one of the most drought tolerant crops. Yields are still limited by drought because most of the mechanisms of drought tolerance, their interactive effects, and associated morphological and physiological modifications and symptoms have not yet been fully identified and understood by plant breeders and plant physiologists. This study focuses on the effects of intermittent or continuous low availability of water on the root system and rooting pattern of sorghum including the influence of soil type on water relations within the plant.

Conclusions

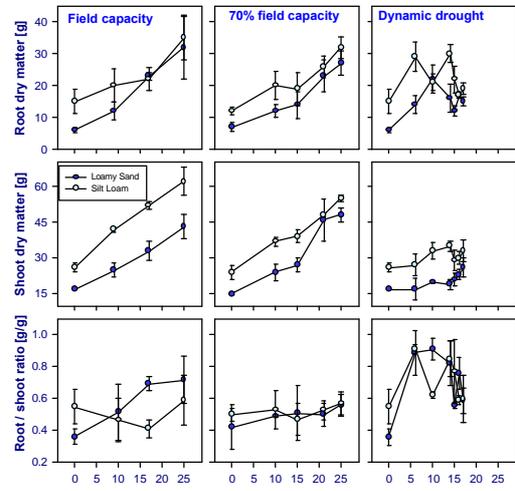
- Sorghum produced more dry matter on silt loam than loamy sand under all water regimes.
- Constant drought shifted partitioning of assimilates in favour of roots in loamy sand, dynamic drought did not affect partitioning.
- Drought increased the production of nodal roots and deeper feeder roots in ICSV 111 IN but decreased total dry matter

Results - Summary

- Moisture content was uniform within silt loam, but increased with depth in loamy sand.
- There were generally more roots in the first (nodal roots) and last (feeding roots) layers than the 2 middle layers.
- More dry matter was produced on silt loam than on loamy sand and root shoot ratio increased with soil drying.



Interactive Effects of Soil Type and Moisture Regime on Vertical Distributions of Moisture and Roots



Time Course of Shoot and Root Dry Matter Accumulation Within the Treatments

Materials & Methods

- 9L pots constructed from PVC pipes
- 0.5 m high pots made from 4 equal compartments with 0.15 m internal diameter
- Perforated silicon tube (fitted with funnels) placed throughout the length of the pots for irrigation.
- Treatments were a factorial of two soil types and three water regimes



Acknowledgement

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