Bodenmelioration und Anbauverfahren für trockenheitsgefährdete Standorte

UNIVERSITÄT HOHENHEIM

Department of Plant Production and Agroecology in the Tropics and Subtropics
Section: Crop Waterstress Management

Seed coating with hydro-absorbent properties as possible mitigation strategy for unreliable rainfall patterns in early-sown sorghum

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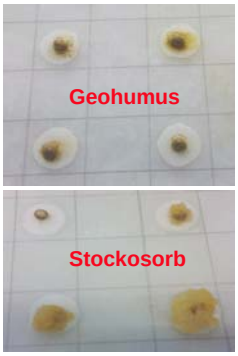
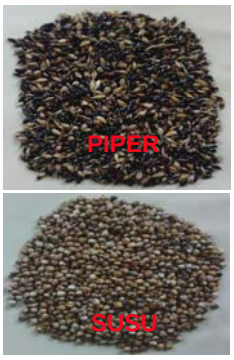
Introduction

Coating cereal seeds with hydro-absorbing substances may increase the drought resistance of germination in field grown crops. Under drought stress germination rate and remobilization efficiency are especially affected. To test for these effects, germination rate and remobilisation efficiency, were studied for two varieties of sorghum (SUSU and PIPER) seeds coated with two different hydro-absorbers: Stockosorb and Geohumus under stressed conditions and these were compared with the uncoated seeds.

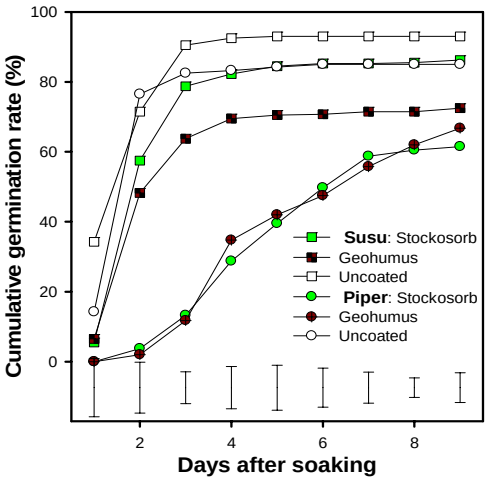


Conclusion and Outlook

- Seed coats containing Stockosorb impede germination less than Geohumus containing coats
- Seed coats containing Geohumus promote early vigor and seedling survival under drought
- The potential for field applications of coating technologies will be tested

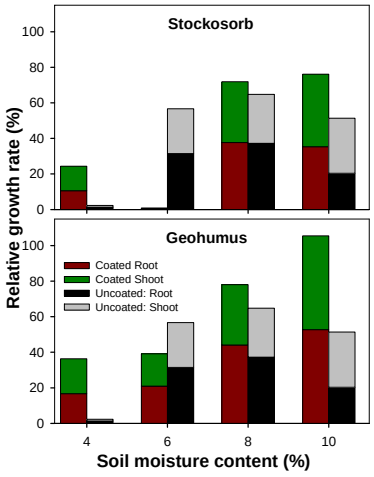


Preliminary Results and Discussion



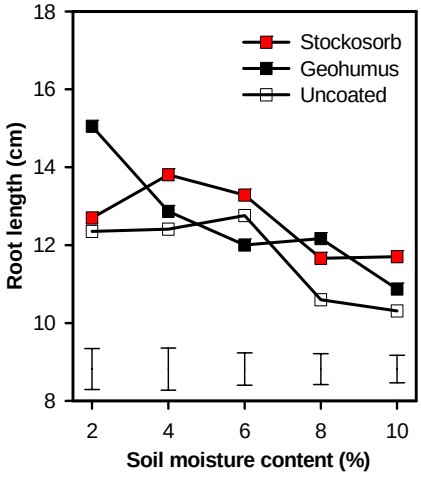
Effect of coat type on germination rate

- Coating reduced germination rate
- Effects were stronger in PIPER than in SUSU
- Geohumus reduced germination rate more severely than Stockosorb in SUSU



Effect of coat composition on relative growth rate of sorghum (SUSU) seeds

- Seed coats containing hydro-absorbers increased relative growth rate
- Seed coats containing Geohumus promoted early vigor
- Hydroabsorbers prolong seedling survival under drought

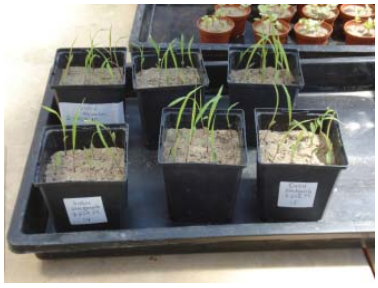


Effect of coat composition on root length under drought

- Seed coat composition did not significantly influence root growth
- Drought promoted root length in sorghum cv. SUSU

Notes on material and method

- 2 sorghum varieties: SUSU and PIPER.
- Seeds coated with: (1) Stockosorb® (2) Geohumus® and (3) uncoated
- 50 seeds from each treatment replicated 4 times were placed on moist filter paper (3 x 2.5 cm) in plates and grown in a growth chambers at 25°C in the diurnal mode.
- Germination rate was assessed daily
- 10 Seeds were sown per pot containing 1kg of sand.
- Soil moisture was reduced from 10% to 2% over 8 days
- Dry matter, root length and relative growth rates were determined



Acknowledgements

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