Tropical weeds and sorghum along a water gradient

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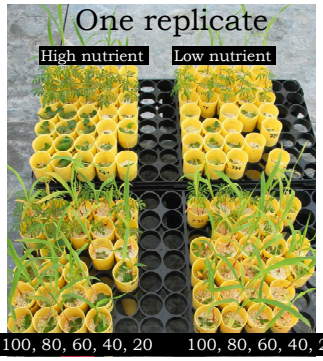
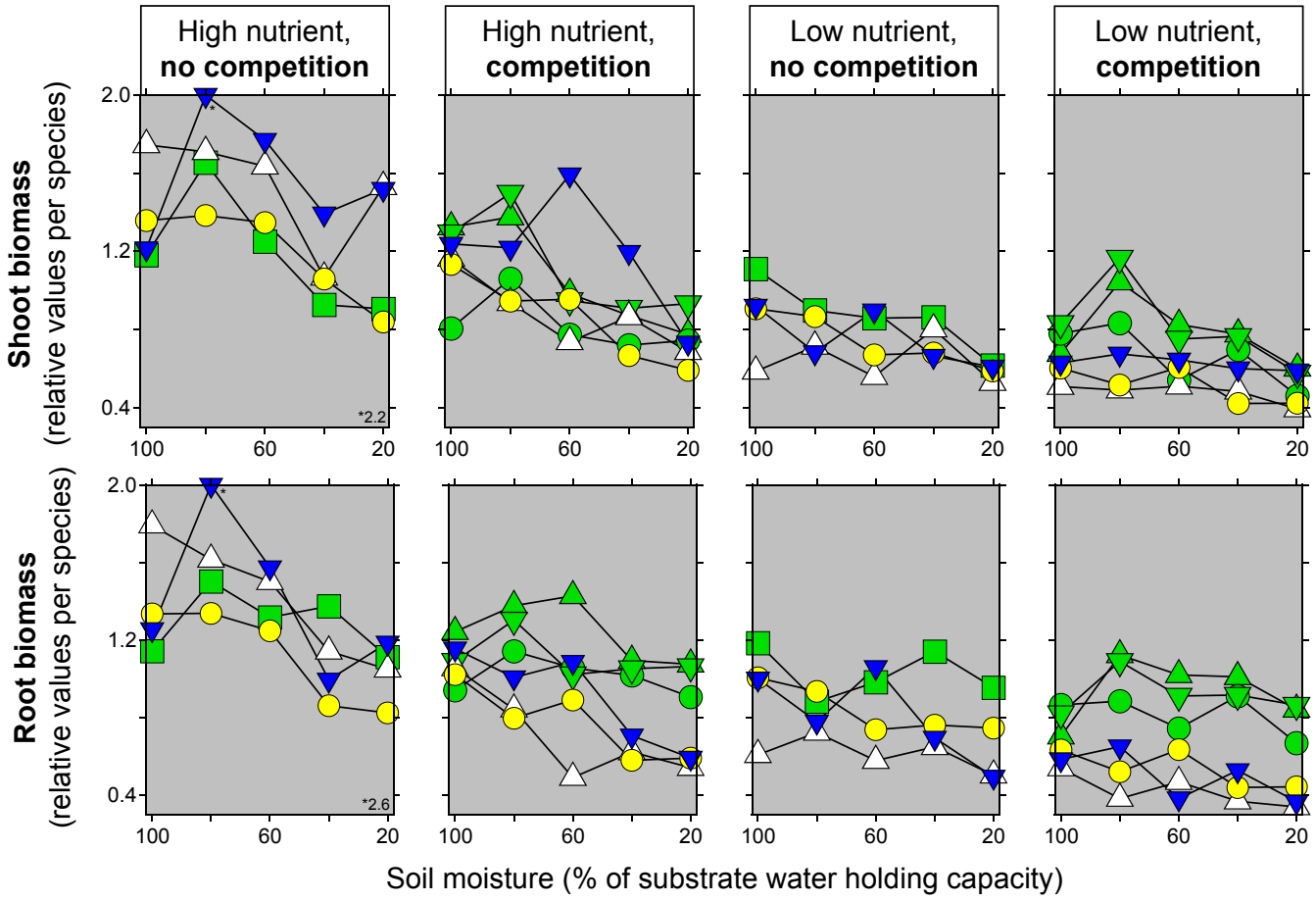
We investigated interactions during early growth between an Ethiopian grain Sorghum and three serious weed species: *Parthenium hysterophorus*, *Tagetes minuta* and *Verbesina encelioides* (Asteraceae), occurring in the same environment.



Seedlings were grown, with and without competition, along a water gradient and at two different levels of fertilization. Two weed populations and seven replicates of each combination were used. Root and shoot biomass were recorded after six weeks.

100, 80, 60, 40, 20 100, 80, 60, 40, 20 % of substrate water holding capacity



When grown without competition, sorghum plants were largest; *Tagetes* on average 70 % of the weight of Sorghum, *Parthenium* 30 and *Verbesina* 25.

On average, Sorghum lost 13 % of weight due to competition, *Tagetes* and *Verbesina* lost ca 30 % and *Parthenium* ca 45 %. *Tagetes* caused the largest loss on Sorghum, and *Parthenium* the least.

- Sorghum, no competition
- Sorghum, with *Parthenium*
- Sorghum, with *Tagetes*
- Sorghum, with *Verbesina*
- *Parthenium*
- *Tagetes*
- *Verbesina*

Despite effects of competition, inherent differences among species and responses to different water and nutrient availabilities, the relative effect of competition was not affected by nutrient supply or water gradient.

In conclusion, *Tagetes* was the most serious early competitor with Sorghum, irrespective of water or nutrient availability treatment.

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We thank Formas for funding