

Progress Promise project – September 2020

Over the past year, exciting progress was made in the mechanistic understanding of the tripartite interactions between sorghum, *Striga* and the soil/root microbiome. Several Ethiopian soils were identified where *Striga* seeds exhibit high levels of suicidal germination. The role of the microbiome in this striking phenotype and the identification of the responsible microbiome members and traits is under investigation. Candidate genes of sorghum plants involved in the biosynthesis of haustorium inducing factors were identified as well as several new fungal, bacterial isolates with strong adverse effects on the initial stages of the *Striga* life-cycle. Furthermore, specific metabolites of microbial origin (volatile organic compounds, secondary metabolites) or of plant origin (root exudate components) were found that affect *Striga* seed germination and haustorium formation. Based on these new results, a selection of microbial isolates and metabolites have been prioritized for activity profiling in a high-throughput series of sorghum-*Striga* greenhouse bioassays. In combination with several sorghum genotypes, characterized for root architectural and metabolomic traits, up to 150 isolates are currently being tested for their efficacy to control *Striga* infections of sorghum.

Photo: Electron microscopy picture of a single *Striga* seed with fungal spores attached to the seed surface (in close collaboration with Institute of Biology, Leiden University, Netherlands) ©

