

Effects of selected microbes on early developmental stages of *Striga hermonthica*

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Abstract: The root-parasitic flowering plants *Striga spp.*, constitute a threat to cereal production in Sub-Saharan Africa including Sudan. Root parasitic weeds considerably damage their host's even before emergence above ground. The early stages of the life cycle of the parasites including germination and attachment are coordinated by host-derived signals. Inoculations of soils with organisms that perturb early developmental events may abort parasitism and reduce subsequent damage. In the present study bacterial strains and isolates were screened for influence on *Striga* germination and haustorium initiation in response to sorghum – derived signals. A *Fusarium sp.*, isolated from diseased *S. hermonthica* plants, was tested for ability to modulate germination in response to GR24, a synthetic *Striga* germination stimulant. Some bacterial strains and isolates including *Azospirillum brasilense*; *Pseudomonas putida* GSL, S22, S23, S19 and S10 inhibited germination by 40 to 85%. Haustorial initiation in response to root exudates showed differential response to bacterial strains and isolates. Isolates GSL, S22, G14 and strains *P. putida* and *A. brasilense* inhibited haustorium initiation by 52-85%. Isolates S22, S23, S19, D25 and GSL suppressed *Striga* attachment significantly and isolate GSL was the most suppressive. The bacterial isolates reduced attachment by 78 to 81%. Conditioning *Striga* seeds in *Fusarium* culture reduced germination to negligible (0 and 2.6%) in response to GR24 at 0.001 and 0.1 ppm. Seeds conditioned in water displayed high germination (94 and 99%). Filter sterilization of *Fusarium* culture filtrate reduced activity. *Striga* seeds conditioned in *Fusarium* inoculated soil displayed reduced response to GR24. GR24 at 0.001 and 0.1 applied to seeds conditioned in soil inoculated with the fungus induced 16.5 and 61.7 germination, respectively compared to 50.4 and 16.5% germination in seeds conditioned in *Fusarium* free soil. *Fusarium* inoculation of compost amended soil completely inhibited germination in response to GR24 at 0.001 ppm and reduced germination to 14.5% at the higher GR concentration (0.1 ppm). The compost, alone reduced germination in response to GR24 to 6 and 28.2%, respectively.

Keywords: *Striga hermonthica*, bacteria, suppression, germination, subsequent developmental stages