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Sustainable biocontrol of Striga (witchweed) in Kenya using an enhanced biocontrol fungus

A fundamental problem with weed biocontrol agents is their lack of sufficient virulence. Biocontrol agents must be able to kill a weed in its seedling stage, they must be host specific, and cost efficient, preferably at a cost that is less than that of herbicides. Starting with a fungus that is host specific it is necessary to select for high virulence in order to have high mortality at reasonable cost. I chose the *Fusarium oxysporum f.sp. strigae* (FoxyS) because it only attacks the parasitic plant, *Striga hermontheca*, a deadly weed limiting subsistence agriculture in Africa. *Striga* can reduce farmer's yields of maize by 50% or more. Tests have shown that the amino acids tyrosine and leucine inhibit striga without inhibiting maize, the principal food crop in Kenya. The amino acid excretion was verified using a bacterial bioassay. The fungus is incorporated into the fields using toothpicks that have been inoculated with FoxyS. The inoculated toothpicks are put in a pot of cooked rice so the fungus can grow into the rice and can easily be planted with the crops. This is incredibly cost effective since it only takes one inoculated toothpick to protect a field.