The 3rd International Electronic Conference on Plant Sciences, 14-17 Jan. 2024

Review: Arbuscular Mycorrhizal Fungi and Phosphorus Solubilizing Bacteria: Plausible Candidates or *Striga hermonthica* Management in Sorghum

Magdoline Mustafa Ahmed [1,2], Rania Alresheed Abakeer [1.3], Mohammed Mahgoub Hassan[1], Elshafia Ali Hamid Mohammed [4.5], RatonyiTamas[2], AbdelGabar Eltayeb Babiker[1]

[1]*Environment, Natural Resources and Desertification Research Institute, National Center for Research, Khartoum, Sudan*
[2]*University of Debrecen, kerpely kálmán, Crop Production and Horticultural Sciences, Debrecen, Hungary*
[3] *McGill University, Agricultural and Environmental Sciences, Plant Science Department, Quebec, Canada*
[4] *Debrecen University, Faculty of Agric., Food and Sci. and Envi. Management, Dept. of Animal Science, Debrecen, Hungary*
[5]*Agricultural Research Corporation, Crop Protection Research Center, Wadmadani P.O. Pox. 126, Sudan*

Abstract

Striga spp. root hemi parasitic weeds on major staple food crops including sorghum maize, pearl millet and rice, have been reported to threaten food security in sub-Saharan Africa. Among *Striga spp.*S. *hermonthica* is the most important and most prevalent in the region and thrives best under low soil fertility. *Striga* germinates in response to stimulants exuded by host roots. Following germination the parasite attaches, penetrates the host roots, establishes connection with the host xylem, grows parasitically and remains subterranean for 6-8 weeks. During the subterranean phase the parasite inflicts most of its damage. Several control tactics including cultural, chemical and biological methods have been released for combating the parasite. However, adoption rate of available control technologies remains minimal. Low adoption rate of the released technologies is attributable, mainly, to the mismatch of the technologies and the prevalent low-input subsistent farming system. The need for simple, inexpensive environmentally benign methods of control that affect the parasite at early stages of development is imperative. In nature, the *Striga* germination stimulants, collectively named strigolactones, are the Arbuscular Mycorrhiza Fungi (AMF) hyphal branching factors the production and release of which from host roots are promoted by low soil fertility. The link between low soil fertility, *Striga* infection and mycorrhization promoted research on AMF as *Striga* antagonists with positive effects. However, AMF colonization is influenced by a multitude of variables including plant species, genotypes, drought, cultural practices, pesticides, initial soil fertility and the rhizospheric microbes, particularly phosphorus-solublizing bacteria and growth-promoting Rhizobacteria, where both synergistic and antagonistic interactions were reported.

Key word: *Striga hermothica*, Mycorrhiza , Sorghum, Phosphorus Solubilizing Bacteria