

## Towards maximum utilization of the noxious root parasitic weeds, *Striga* spp.

Masaki Kuse<sup>1</sup>, Reem Gaddal<sup>2</sup>, Abdel Gabar Babiker<sup>3</sup> and Yukihiro Sugimoto<sup>1</sup>

<sup>1</sup> Graduate School of Agricultural Science, Kobe University, 1-1 Rokkodai, Nada, Kobe, Japan

<sup>2</sup> College of Agricultural Studies, Sudan University of Science and Technology, Shambat, Khartoum North, Sudan

<sup>3</sup> National Center for Research, Mohamed Nagib Street, Deposit 57 St. Amarat, Khartoum, Sudan (kuse@eagle.kobe-u.ac.jp)

**Summary** The witchweeds (*Striga* spp.), root parasitic angiosperms predominant in sub-Saharan Africa, are major constraints to cereals production including the main food crops sorghum, millet and maize. The parasites induced to germinate by host-derived chemical signals, attach, penetrate the host roots, establish connection with the vascular system and remain subterranean for 6–8 weeks during which period they inflict most of their damage. Our group has recently demonstrated that chemical induction of germination of *Striga* seed, in absence of or away from host roots, is a practical method of control. The method, commonly referred to as ‘suicidal germination’, is a powerful tool to evade crop damage by the parasite. Post-emergence control methods including hand-pulling, albeit curtail seed bank replenishment, are not acceptable to

farmers as early damage by the parasite preclude financial returns. Our goal is to promote *Striga* spp. control and curtail their spread through commercial utilization of seedlings. Metabolome analysis of *Striga* showed pre-dominance of optically active flavonoids and terpenoids that have high commercial values as sources of fine chemicals and lead compounds of medical importance. Further analysis indicated the presence of other biologically useful compounds including the famous vermifuge santonine. Challenges have been continued to establish simple and efficient methods to isolate these compounds and maximize utilization of *Striga* spp. as medicinal plants.

**Keywords** Metabolome analysis, *Striga*, parasitic weeds, secondary metabolites