Effect of rotation with trap crops on *Striga* incidence, seed bank and sorghum growth and yield

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Abstract: A field trial was conducted for three consecutive seasons (2006/07, 2007/08 and 2008/09) in a field artificially infested by *S. hermonthica* in the experimental farm of the Faculty of Agriculture, University of Sinnar at Abu Naama. The effects of a 2 season crop rotation comprising of combinations of trap crops, cowpea (*Vigna anguiculata*), millet (*Pennisetum glaucum*), sesame (*Sesamum indicum*) sunflower (*Helianthus annuus*) and fallows on *Striga* incidence, seed bank and a subsequent sorghum growth and yield were investigated. A sole sorghum crop planted for the three consecutive seasons was included as a control for comparison. All treatments reduced *Striga* emergence significanly. Sunflower and sesame grown for two consecutive seasons caused the maximum reductions (80%), while a fallow followed by sorghum resulted in the least reduction (42%). All treatments reduced capsules production. However, the reduction (37%) was only significant in plots previously planted to two consecutive sesame crops. All treatments reduced *Striga* seed bank, significantly, in the first and second cropping seasons. Two consecutive fallows and two consecutive crops each of cow pea, millet and sunflower resulted in the highest reductions (80-92%), while a fallow followed by sorghum displayed the least reductions (51-65%). None of the treatments had adverse effects on sorghum stand early in the season. However, at harvest sorghum stand was seriously reduced. Sorghum monoculture resulted in the lowest stand, while sunflower planted subsequent to a fallow and two successive sunflower crops affected the highest sorghum stand. Among all treatments sorghum monoculture and sorghum planted subsequent to sorghum or millet, each preceded by a fallow, resulted in the lowest grain yields. All treatments, except millet preceded by fallow, significantly increased the subsequent sorghum grain yield. However the highest grain yields increments (194%) was obtained when sorghum was preceded by two consecutive sunflower crops. Straw yield, more or less followed the same trends. Sorghum monoculture and sorghum planted subsequent to tow consecutive sunflower crops gave the lowest and highest yields respectively.

Keywords: crop rotation, trap crops, *Striga*, sorghum