

## EFFECTIVE WEED CONTROL METHOD FOR *Cyperus rotundus* (KALANDURU) IN IRRIGATED LAND OF LOW COUNTRY DRY ZONE, SRI LANKA

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### Abstract

*Cyperus rotundus*, commonly known as *Kalanduru* is a troublesome and economically damaging weed, widely naturalized in the tropical and subtropical regions of the world. An experiment was conducted to identify an effective weed control method for *C. rotundus* in the irrigated farmland in UCIARS, Weligatta, Hambantota, Sri Lanka. A Split Plot Design with three replicates was used for the field experiment with three main plot factor levels (primary tillage – disc plough, primary with secondary tillage - disc plough + rotavator and zero tillage) and five subplot factor levels (chemical weedicide – Glyphosate 36% SL), organic mulch - paddy straw, inorganic mulch - black polythene, herbaceous cover crop - *Cleome viscosa* L. and no weed control). Fifteen treatment combinations were used. The weed parameters such as weed density and biomass of *C. rotundus* were measured monthly in three randomly selected places using a 20 cm × 20 cm quadrant. Analysis of variance (ANOVA) was performed for all the data at the 5% probability level using SAS software and DMRT was used for mean separation. There was a significant interaction between different tillage and management methods on weed density of *C. rotundus* after the 1<sup>st</sup> and 2<sup>nd</sup> months. Also, significantly higher values of weed density were observed in the treatments where received primary and secondary tillage with Wal aba cover crop (633.3 plants/ m<sup>2</sup> in 1<sup>st</sup> and 2<sup>nd</sup> month), primary and secondary tillage with no weed control (600 plants/ m<sup>2</sup> in 1<sup>st</sup> month and 591.6 plants/m<sup>2</sup> in 2<sup>nd</sup> month), zero tillage with Wal aba cover crop (566.67 plants/m<sup>2</sup> in 1<sup>st</sup> month and 533.3 plants/m<sup>2</sup> in 2<sup>nd</sup> month), and Zero tillage with no weed control (583.33 plants/m<sup>2</sup> in 1<sup>st</sup> month and 666.67 plants/m<sup>2</sup> in 2<sup>nd</sup> month). Moreover, all other treatments showed significantly lower weed density after the 1<sup>st</sup> month. According to the results primary tillage with glyphosate, primary tillage with paddy straw, and primary tillage with black polythene were recorded as highly effective for control of *C. rotundus* than other treatments. The lowest performance was recorded in primary and secondary tillage with Wal aba cover crop. The primary tillage with paddy straw (organic mulch) recorded the highest performance in controlling *C. rotundus*. Hence, it can be concluded that the tillage with mulching had a significant impact on management of *C. rotundus*. Furthermore, primary tillage is highly effective in suppressing *C. rotundus*.

**Keywords:** *Cleome viscosa*, *Cyperus rotundus*, Glyphosate, Herbaceous cover crop, Paddy straw

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