



The Impact and Sustainable Management Practices of the *Paspalum scrobiculatum* in Low Land Paddy Field of the Northern Province of Sri Lanka

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Abstract

*Paspalum scrobiculatum* L. is a problematic weed in the Northern Province of Sri Lanka. An attempt was made with an objective to study the occurrence and impact of such weed on paddy yield in order to develop sustainable management strategies. The study was carried out in the selected paddy fields of Northern Province and seed paddy growing fields of Government Seed Production Farm at Paranthan, Kilinochchi. A survey was carried out across the Northern Province of Sri Lanka using a structured questionnaire to determine existence and distribution of weed and the control methods practices used by farmers. Furthermore, systematic field experiments were performed to study the morphological features of the weed, the effect of weed density on the yield of the paddy, the influence of paddy varieties on the suppression of the weed, effect of paddy processing on the removal of weed seeds, effect of different land preparations on the spread of the weed. The influence of rotational crops on the weed population and effect of different weed control methods on the suppression of the weed. The results of the survey revealed that 20 - 40 % of yield loss was due to spreading of *P. scrobiculatum* in the paddy fields. *P. scrobiculatum* compete with the short duration (three months) paddy varieties. Moreover, paddy fields with 75% weed infestation produced 25% yield only. Sieve tray hole size of 1.85 mm diameter at bottom and 4.5 mm diameter at top was effective to eliminate 25.70 % of *P. scrobiculatum* seeds. Disc plough followed by tine tiller at two weeks interval significantly reduced weed population and weed dry matter together with highest yield of paddy (3.75 mt/ha). Hence, land preparation in dry sown paddy field using disc plough followed by tine tiller twice at two weeks' interval would be a best solution for significantly reducing the *P. scrobiculatum* population. Among the rotational crops tested, sunhemp was significantly the best in reducing the population of *P. scrobiculatum*. Hand weeding had a significant effect on *P. scrobiculatum* dry weight (16.63g/m<sup>2</sup>) and highest yield of paddy (3.56 mt/ha). Furthermore, among the post-emergence herbicides, application of Cyhalofopbutyl 100 g/1EC 640mLha<sup>-1</sup> had significantly reduced the *P. scrobiculatum* dry weight (9.73g/m<sup>2</sup>). Hence, integration of cleaning with sieve size of 1.85x4.5mm diameter, disc with twice tine tillers, rotating with sunhemp and application of Cyhalofopbutyl as post emergence herbicide would be the best package of practices to manage *P. scrobiculatum* in the low land paddy fields of Northern Province of Sri Lanka. Exploring potential of bio control agents, further screening of herbicides, allelopathic and suppressive effects of legumes rotate with paddy are to be investigated.

**Keywords:** low land paddy; *Paspalum scrobiculatum*; tillage; seed cleaning; crop rotation; herbicide.

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