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Efficacy of MSMA Based Premix Herbicides on Control of Goosegrass (*Eleusine indica*) that Evolved Resistance across Glyphosate, Glufosinate and Fluazifop

SIM K C, ANTHONY TAN S H, WONG K J

Ancom Crop Care Sdn Bhd, No. 31, Jalan Tukul P15/P, Seksyen 15, 40200 Shah Alam, Selangor Darul Ehsan, Malaysia

AND

CHUAH T S

School of Food Science and Technology, University Malaysia Terengganu, 21030 Kuala Nerus, Terengganu Darul Iman, Malaysia

Eleusine indica, *commonly known as goosegrass, is an annual noxious grassy weed which has a wide tolerance to environmental stresses. In Malaysia, infestation of goosegrass at immature oil palm and rubber plantations, orchards and vegetable fields has caused a significant loss in crop yields. Currently, this weed species has developed resistance to four groups of herbicides including glyphosate, glufosinate, paraquat or/and fluazifop. This study aimed to determine efficacy of MSMA based premix herbicides on control of the resistant biotypes of mature goosegrass (RG). Under greenhouse conditions, MSMA + diuron at 3000 + 600 g a.i. per hectare and MSMA + diuron + glufosinate at 1350 + 260 + 330 g a.i. per hectare provided 80 per cent to 95 per cent growth inhibition on the RG plants. Glufosinate gave less than 40 per cent inhibition of growth whereas glyphosate and fluazifop at their respective recommended rates exhibited 125 per cent to 135 per cent growth stimulation on the RG plants four weeks after treatment (WAT). Under field conditions, both MSMA based premix herbicides gave complete control of the RG plants after two WAT. In contrast, partial scorching was observed on the RG plants at one WAT with glufosinate, glyphosate and fluazifop treatment, respectively, and the RG plants started to regrow at two WAT. These results suggest that MSMA plus diuron with or without glufosinate could provide excellent control of gooosegrass that evolved resistance across glyphosate, glufosinate and fluazifop.*

Keywords: *Herbicide mixture, diuron, MSMA, multiple resistance.*