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Chemical Control of Herbicide-resistant *Eleusine indica* in an Oil Palm Nursery

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Eleusine indica has been reported to have become a dominant weed in oil palm nurseries after repeated chemical usage, especially of the same chemicals. This weed species is reported to be resistant to a number of herbicides including glyphosate. The main strategy to prevent or avoid herbicide resistance has been to apply combinations of herbicides in mixtures or in sequence. A field trial was conducted in an oil palm nursery to determine the effectiveness of clethodim, a new grass herbicide, in combination with glyphosate against *E. indica* that had been reported to be resistant to glyphosate. A total of ten treatment combinations were evaluated. Clethodim 26 per cent w/w EC at 0.9 litre product per hectare and 1.125 litres product per hectare with or without added adjuvant were found to be effective in controlling *E. indica* up to four weeks after spraying. However, weed succession by species of sedges and broadleaved weeds (*Cyperus digitatus*, *Borreria latifolia*, *Ageratum conyzoides*, *Phyllanthus amarus* and *Cleome rudidosperma*) occurred within the sprayed areas as early as three weeks after spraying; where glyphosate IPA 41.0 per cent w/w SL alone at 2.0 litres product per hectare was ineffective, indicating weed resistance. The lower rate of glyphosate IPA 41.0 per cent w/w SL + clethodim 26 per cent w/w EC at 2 litres + 0.54 litre product per hectare only provided 85 per cent control, and is followed with regeneration of the *E. indica* at three weeks after spraying. However, there was no succession by other weeds in this glyphosate IPA + clethodim mixture. The treatment with glyphosate IPA 41.0 per cent w/w SL + clethodim 26 per cent w/w EC at 2 litres + 0.9 litre product per hectare was most effective and gave excellent control of *E. indica* and at the same time there was no weed re-growth or succession up to four weeks after application. The responses observed in all glyphosate IPA + clethodim combinations suggest synergistic activity in mixture.

Keywords: *Eleusine indica*, herbicide resistance, clethodim, glyphosate, weed management.

