

SUMMARY

In this research, a series of glasshouse and field trials were carried out to re-evaluate the chemical control of torpedograss (Panicum repens L.), with an intention to reduce the cost involved, either by improving the activity of the generally recommended herbicide, glyphosate, with modified spray formulations, or by introducing new generation novel systemic 'graminicides', sethoxydim, fluazifop-P or haloxyfop-methyl.

Glyphosate, sethoxydim, haloxyfop-methyl and fluazifop-P applied as foliar sprays were evaluated for torpedograss control under both glasshouse and field conditions. In general, glyphosate and sethoxydim at the rates of 2.0 and 4.0 Kg/ha achieved superior control of the grass, suppressing 90-95% regrowth 30 days after treatment and achieving 95-100% rhizome bud kill. The performance of fluazifop and haloxyfop, as measured by regrowth suppression was significantly less at these rates, although the latter two herbicides also caused 90-95% kill of rhizome buds. Rates below 1.0 Kg/ha of all four herbicides gave insufficient regrowth suppression and bud kill and could not adequately control well established mature plants. Of the herbicides tested haloxyfop-methyl showed the least phytotoxic effects on the grass.

The effect of the quality of water used as the carrier volume had a significant effect on the performance of glyphosate. Glyphosate activity was enhanced greatly when de-ionized water was used instead of 'well' water to prepare

the spray solutions, an effect attributable probably to the presence of cations in the 'well' water. Reduction in carrier volume from 600 L/ha to 300 L/ha did not alter the glyphosate activity significantly.

Contents The influence of several additives on glyphosate phytotoxicity was studied under glasshouse conditions. Glyphosate was less phytotoxic when applied in 100 mM solution of calcium chloride and zinc sulphate, while the addition of magnesium sulphate or ammonium bicarbonate, did not alter glyphosate activity. Of the ammonium salts added to the spray solutions, only ammonium sulphate and urea at 0.5% enhanced the glyphosate activity.

Non-ionic surfactants "AGRAL-90", and SURFACTANT - N" both at 0.1% and 1.0% very significantly increased the performance of glyphosate, indicating that surfactant use should become a general recommendation with glyphosate. A **Chapter** number of selected petroleum and vegetable oils used as adjuvants did not make significant alteration of glyphosate activity. When the pH of the spray solution was altered, glyphosate at pH 6 exhibited the best phytotoxic activity against the torpedograss.