

Response of In vitro Selected Plants to 2,4-D in Birdsfoot Trefoil

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Whole plant tolerance to 2,4-D has been correlated with in vitro tolerance in trefoil. Earlier work in this laboratory reported that a 2,4-D tolerant field line (T-68) manifested a differential tolerance to 2,4-D in vitro compared to a susceptible cultivar (Leo). This tolerance could be observed at relatively low in vitro levels of 2,4-D (5-10 mg/l) and could be overcome by higher levels of 2,4-D or by longer incubation times on lower levels of 2,4-D. Selection of in vitro 2,4-D tolerant lines of Leo were successful. One selection tolerating 40 mg/l 2,4-D and proved stably tolerant when differentiated to whole plants and recultured. Interestingly these very tolerant in vitro lines showed no differential tolerance to 2,4-D as whole plants. Other Leo selections did show some tolerance to 2,4-D as whole plants. The whole plant tolerance was at .5 - 1 kg/H 2,4-D, but proved significantly less tolerant than T-68 which tolerated 2 kg/H 2,4-D. These studies illustrate the problem of selecting in vitro tolerance to compounds which can operate on various levels and produce varied effects. Apparently, effects which enable in vitro 2,4-D tolerance may be preferentially selected rather than 2,4-D tolerance in vitro which also results in whole plant tolerance to 2,4-D.