

# Comparison of Two Detection Methods in Thin Layer Chromatographic Analysis of Some Herbicides in a Coastal Savanna Soil in Ghana

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## Abstract

*o*-tolidine plus potassium iodide and photosynthesis inhibition detection methods were investigated for the analysis of three triazine herbicides (atrazine, ametryne, simazine) and two urea herbicides (diuron, metobromuron) in a coastal savanna soil using thin layer chromatography to compare the suitability of the two methods for the study of the herbicides. This was done by spiking 5 g of the soil sample with specific amount of the herbicide standards to generate herbicide-soil concentration of 40.24, 41.46, 40.28, 39.90 and 40.64 µg/g for atrazine, ametryne, simazine, diuron and metobromuron, respectively. Extraction was performed with acetone/hexane mixture (4:1) and the detection limit of each herbicide was then determined. In all, the photosynthesis inhibition method performed better for both the triazine and the urea herbicides, while the *o*-tolidine plus potassium iodide method was suitable for only the triazine herbicides. With the photosynthesis inhibition method, detectability in the range of 0.004–0.008 ± 0.002 µg/g was attained for the herbicides using the unclean extracts. In the case of *o*-tolidine plus potassium iodide method, detectability of 0.008–0.406 ± 0.02 µg/g was obtained. With the clean up extracts detectability in the range of 0.025–0.162 ± 0.004 µg/g was obtained using the photosynthesis inhibition method. However, metobromuron was not detected in the cleaned up extracts when *o*-tolidine plus potassium iodide detection method was used. For the methods described, clean up with SPE cartridge, equipped with C-18, is not critical to obtain the desired results.