PERSISTENCE OF RESIDUAL HERBICIDES IN MAIZE SILAGE FIELDS

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Annual ryegrass (*Lolium perenne*) is typically grown in the winter following maize (*Zea mays*) silage, but alternative crops, such as oats (*Avena sativa*) and triticale (x *Triticosecale*), are being investigated. The persistence of residual herbicides used in maize silage crops was investigated in three field trials located in Waikato (5.5% organic carbon), Taranaki (8.4% OC) and Canterbury (3.7% OC) planted on 3, 5 and 16 October 2008 respectively. Herbicides investigated included atrazine and acetochlor applied pre-emergence, and mesotrione and nicosulfuron applied 6–12 weeks after planting. Broadleaf weeds in control plots were removed with the non-residual herbicide bromoxynil. Soil samples (10 cm depth) were collected about the time of silage harvest, and herbicide residues determined by glasshouse bioassay using oats and mustard (*Brassica nigra*). Detection limits ranged from 0.01–0.1 mg/kg for atrazine and acetochlor, 0.005–0.02 mg/kg for mesotrione and 0.002–0.01 mg/kg for nicosulfuron. Using oats, no residues were detected at any of the sites, but the mustard bioassay found about 0.005 mg/kg nicosulfuron at the Taranaki site, which was the last site treated post-emergence and with the least rainfall (180 mm) between application and sampling (215 mm for Waikato; 350 mm for Canterbury).