

**SUGARCANE HERBICIDE LEACHING RISK EVALUATION
IN GUARANY AQUIFER**

Lourival Costa Paraíba¹; Karen Kataguirí²; Antonio Luiz Cerdeira¹; Sônia Cláudia Nascimento de Queiroz¹ & Vera Lúcia Ferracini¹

Abstract – The region of Ribeirão Preto, São Paulo State, Brazil, is located over recharge area of the Guarany aquifer, the most important source of groundwater in the South Central region of the country. This region is also the most important sugarcane producing area of the country which produces a large amount of the ethanol. This study was conducted to determine the potential risk of herbicide groundwater contamination. The leaching risk potential of herbicides to groundwater was conducted using the weather simulator “Weather Generator” (WGEN) coupled with the model “Chemical Movement Trough Layered Soils” (CMLS94). The following herbicides were evaluated in clayey and sandy soils (Typic Haplorthox and Typic Quartzipsamment soils) found in the region: ametryn (N-ethyl-N'-(1-methylethyl)-6-(methylthio)-1,3,5-triazine-2,4-diamine), atrazine (6-chloro-N-ethyl-N'-(1-methylethyl)-1,3,5-triazine-2,4-diamine), clomazone (2-[(2-chlorophenyl)methyl]-4,4-dimethyl-3-isoxazolidinone), diuron (3,4-dichlorophenyl)-N,N-dimethylurea), halosulfuron (3-chloro-5-[(4,6-dimethoxy-2-pyrimidinyl)amino]carbonyl], hexazinone (3-cyclohexyl-6-(dimethylamino)-1-methyl-1,3,5-triazine-2,4 (1H,3H)-dione), imazapic ((±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-5-methyl-3-pyridinecarboxylic acid), imazapyr ((±)-2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid), MCPA (4-chloro-2-methylphenoxy)acetic acid), metribuzin (4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one), MSMA (Amonosodium salt of MAA), paraquat (1,1'-dimethyl-4,4'-bipyridinium ion), pendimethalin (N-(1-ethylpropyl)-3,4-dimethyl-2,6-dinitrobenzenamine), picloram (4-amino-3,5,6-trichloro-2-pyridinecarboxylic acid), simazine (6-chloro-N,N'-diethyl-1,3,5-triazine-2,4-diamine), sulfentrazone [N-[2,4-dichloro-5-[4-(difluoromethyl)-4,5-dihydro-3-methyl-5-oxo-1H-1,2,4-triazol-1-yl]phenyl]methanesulfonamide], and tebuthiuron [N-[5-(1,1-dimethylethyl)-1,3,4-thiadiazol-2-yl]-N,N'-dimethylurea]. Results obtained by our simulation study have shown that the herbicides picloram, tebuthiuron, and metribuzin have the highest leaching potential, in either sandy or clayey soils, with picloram reaching the root zone of sugarcane at 0.6m in less than 150 days.

Keywords: CMLS94, groundwater, biofuel.

¹Pesquisador(a) da Embrapa Meio Ambiente. CP. 69; CEP 13820-000, Tel. 19-3311-2600; Jaguariúna, São Paulo, Brasil. e-mails: lourival@cnpma.embrapa.br; cerdeira@cnpma.embrapa.br; sonia@cnpma.embrapa.br; veraf@cnpma.embrapa.br; ²Bolsista do PIBIC/Embrapa. Faculdade de Engenharia Ambiental; UNESP - Campus Experimental Sorocaba; São Paulo; Brasil; e-mail: karen.kataguirí@terra.com.br