

ENVIRONMENTAL FATE OF SULFOMETURON METHYL IN SOUTHERN FOREST WATERSHEDS. J. L. Michael, U.S. Forest Service, Auburn, AL 36849 and D. G. Neary, U.S. Forest Service, Gainesville, FL 32611.

ABSTRACT

This study evaluated the fate of sulfometuron methyl in large forest-land watersheds in typical soils of the southern United States. Sulfometuron methyl is active over a range of rates and is recommended at rates up to 0.63 kilograms active ingredient per hectare (kg ai/ha) in non-crop areas for the control of annual and perennial grasses, and broadleaved weeds. The herbicide will be used for weed control on established pine seedlings at a maximum recommended rate of 0.42 kg ai/ha.

Sulfometuron methyl was aerially applied as a spray to a 445 ha watershed near Wahalak, Mississippi during the period of 9-10 April 1985. The site near Gainesville, Florida was treated by ground application. The Florida site was 4 ha in size, and was treated on 13 June 1985. Both sites were treated with 0.42 kg ai/ha.

Samples of vegetation, litter, soil and water were collected from treated and untreated sites at pre-determined intervals and frozen until analyzed. Vegetation and litter samples were analyzed for sulfometuron methyl at a detection limit of 0.050 ppm. Soil samples collected in 46 cm deep cores from bareground and from under litter at three slope positions were frozen until sectioned in 15 cm increments and analyzed for sulfometuron methyl at a detection limit of 0.020 ppm.

Watershed runoff was gauged with a 50 cm rectangular weir at the Mississippi site and a 60 cm long-throated flume at the Florida site. All sites were equipped with automatic sampling and recording devices which sampled storm- and baseflow. In addition, the Florida watersheds had surface groundwater wells which were sampled at bi-weekly intervals. Sulfometuron methyl detection limit in water was 0.001 ppm.

Sulfometuron methyl residues dissipated from vegetation, litter, and soil very rapidly. In vegetation, residues were not detectable beyond 90 days at either site. In litter, sulfometuron methyl was still detectable after 60 days. In the soil profile sulfometuron methyl was not detected below 30 cm and did not persist beyond 60 days.

Sulfometuron methyl residues were measured in water but were intermittent, at very low levels, did not persist beyond 7 days in Florida and 63 days in Mississippi, and did not travel off-site to any appreciable extent.