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LOW IMAZAPYR CONCENTRATIONS IN STREAMFLOW FROM FOREST SITES.

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ABSTRACT

This study evaluated the fate of the herbicide, ARSENAL(R) from large, forest-land watersheds in typical soils of the southern United States. Imazapyr is active over a range of rates and is recommended at rates up to 1.68 kilograms acid equivalent per hectare (kg/ha) for the control of annual and perennial grasses, broadleaved weeds, and woody competition. The herbicide will be used for weed control on established pine seedlings and for pine planting site preparation.

Imazapyr was aerially applied to a 40 hectare watershed near Wedowee, Alabama and to a 121 hectare watershed near Fayette, Alabama using helicopters fitted with raindrop nozzles. Both sites were treated with 2.24 kg/ha in 28 liters of water per hectare made to 0.25% surfactant by the addition of Igepal DM-710.

Imazapyr was observed to move offsite in streams arising from the treated watersheds. Observed movement occurred principally in stormflow and dropped to near background levels within 40 DAT for the worst case studied. Water samples taken from the stream as a function of storm events show little or no baseflow contamination.

The highest observed stream concentration occurred at the Fayette site during the period of aerial application of the herbicide. At this site, no attempt was made to observe an SMZ (streamside management zone). Flight over the stream channel resulted in direct deposition of imazapyr in the stream. At the Wedowee site, where an attempt was made to observe an SMZ, imazapyr was not detected in the stream during application. One sample taken approximately 2 hours after completion of application contained 15 ppb of imazapyr. Subsequent samples did not contain quantifiable residues until the first post-application precipitation. Storm runoff from the Wedowee site contained much lower concentrations of imazapyr than occurred at the Fayette site. Most offsite movement occurred with the first two storm events at both sites. Observed stormflow values compare favorably with those for other forest herbicides applied at similar rates.

Differences in storm runoff concentrations between the Wedowee and Fayette sites suggest maintenance of an SMZ can significantly reduce the amount of offsite movement of imazapyr in stormflow. There was no significant offsite movement via stream sediment.