APPLICATION TIMING OF 20 BASAL BARK HERBICIDE AND OIL DILUENT COMBINATIONS APPLIED TO TWO SIZES OF AMUR HONEYSUCKLE. Ronald A. Rathfon, Extension Forester, Department of Forestry and Natural Resources, Purdue University, Dubois, IN 47527.

In previous studies and in operational field experience, low volume basal bark herbicide treatments have produced inconsistent control of Amur honeysuckle (*Lonicera maackii* (Rupr.) Herder). Twenty different factorial combinations of herbicides and oil diluents were applied to two different size Amur honeysuckle shrubs (4.5 -8 ft. tall and >8 ft. tall) every other month, beginning in July 2004, for six treatment timing applications over a one year period ending in May 2005. The herbicide treatments were: 20% triclopyr ester (Garlon 4), 1% imazapyr (Stalker), 20% triclopyr + 1% imazapyr, 3% imazapyr, and 15% triclopyr + 3% imazapyr. The oil diluent treatments were: diesel oil, AX-IT (paraffinic petroleum distillate), JLB Plus (vegetable oil + d'limonene emulsifier), and Arborchem (aliphatic and paraffinic petroleum distillate).

All three herbicide treatments containing triclopyr, across all oil diluent, shrub size, and month of application treatments, each controlled 94-95% of treated Amur honeysuckle shrubs after two growing seasons. Less than 1% of treated shrubs in triclopyr-containing herbicide treatments produced basal sprouts after two growing seasons. The 1% imazapyr-alone and 3% imazapyr-alone treatments, across all oil diluent, shrub size, and month of application treatments, controlled only 55% and 69% of treated Amur honeysuckle shrubs, respectively. Twenty-five percent of shrubs treated with 1% imazapyr-alone and 19% of shrubs treated with 3% imazapyr-alone produced basal sprouts after two growing seasons. The type of oil diluent did not influence the overall efficacy of the three triclopyr-containing herbicide treatments. The JLB Plus oil diluent reduced control rates for the 1% imazapyr-alone and 3% imazapyr-alone herbicide treatments to 26% and 51%, respectively. The large size class (> 8 ft. tall) of Amur honeysuckle proved more difficult to control than the smaller size class (4.5 – 8 ft. tall), particularly for the 1% and 3% imazapyr-alone herbicide treatments where control was 19% and 14% less, respectively. The larger shrub class was also more likely to produce basal sprouts with these two herbicide treatments; 31% of >8 ft. shrubs treated with 1% imazapyr-alone produced basal sprouts versus 21% of 4.5-8 ft. shrubs; and 25% of >8 ft. shrubs treated with 3% imazapyr-alone produced basal sprouts versus 13% of 4.5-8 ft. shrubs.

Except for a 76% control rate in the July 2004 application, month of application did not affect the three triclopyr-containing herbicide treatment efficacy rates, which exceeded 95% in all other months. In the July 2004 application, high air temperatures on the date of application and for two days thereafter exceeded 32^{o}C. The ester formulation of triclopyr used in this study is known to volatilize under certain conditions above 28^{o}C. Diesel oil is more volatile than the other oil diluents at this air temperature. Triclopyr diluted in diesel oil and applied to the large size class tended to have much lower rates of control in the July 2004 application, ranging from 13%-63%, thus bringing down the overall mean for the herbicide treatments in that month. Because of these factors, less active ingredient may have been delivered into target shrub vascular systems in July 2004 than in other months. Although the two imazapyr-alone treatments had lower control rates throughout the entire year than the triclopyr-containing treatments, the July 2004 and January 2005 imazapyr-alone treatment applications had significantly lower rates of control than in other months of the year. For the imazapyr-alone herbicide treatments, basal sprouting rates were significantly higher for shrubs treated during the dormant months, November 2004 – March 2005, with the January 2005 treatment application resulting in 49% and 35% of shrubs producing basal sprouts for the 1% and 3% imazapyr-alone herbicide treatments, respectively. Only the May 2005 application of 3% imazapyr-alone provided acceptable levels of control (82%-95% across the four diluents) and basal sprouting (6%-11%).

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Triclopyr, when correctly applied as a basal bark treatment, effectively controls Amur honeysuckle. Triclopyr basal bark efficacy remains consistently high when diluted with any one of a variety of oil diluents, when applied at any time of the year except when air temperatures exceed 28°C-30°C, or regardless of shrub size. Manufacturer label directions advising against the use of basal bark treatments when the bark is wet or frozen, or when snow is on the ground, should be followed. When Amur honeysuckle is the primary target of vegetation management efforts, the addition of imazapyr to triclopyr is unnecessary. Imazapyr applied as a basal bark treatment for control of Amur honeysuckle, at the rates investigated in this study, provides inadequate control in most months and regardless of diluent used, or size of target shrub treated.

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