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Chinese Privet Control Comparing Herbicides, Rates, Timings, and Formulations.

Chinese privet (*Ligustrum sinense* Lour.) is one of the most rapidly spreading invasive plants in Southern states, migrating along streams banks, floodplains, and right-of-way margins to infest millions of acres of forests and disturbed sites. Two sets of field experiments were conducted to identify the most effective herbicides for privet control and to determine the most effective rates, timings, and formulations for the promising foliar-active herbicides. Both studies were conducted in uniform infestations of privet growing in Piedmont bottomland forests that were brush-mowed and allowed to resprout before plot establishment (10 x 20 ft). Both used randomized complete block designs with four replications. Herbicide applications were by foliar sprays. Observations of privet reduction were collected for two years after herbicide treatments. The first study was performed near Auburn, Alabama. Eight herbicide formulations at high-labeled rates were tested in August versus September applications to determine the most effective active ingredients. No differences were found due to timing and values were combined. Privet control by herbicide (and rate) with indications of statistical differences was: Accord (1.5 galla) 97% = Arsenal AC (24 ova) 90% = Escort (3.3 ova) 79% > Garlon 4 (1.5 galla) 45% = Oust (6 ova) 32% = Vanquish (1.5 galla) 25% > Tordon K (0.5 galla) 9% = Transline (21 ova) 0% = untreated check 0%. The second study was performed near Athens, Georgia. Two promising non-soil-active herbicides (glyphosate and triclopyr) were tested at various rates (0, 1.5, 3.0, 4.5 and 61bs. acid equivalent/ha), timings (April, June, August, October, and December), and formulations (Accord SP vs Roundup Pro Dry and Garlon 3A in water vs. Garlon 4 in JLB Improved Plus Oil). Herbicide formulation type (dry vs. liquid glyphosate products and water-soluble vs. oil-soluble triclopyr products) did not influence either's degree of privet control. Response-surface analyses indicated significantly greater reductions in privet abundance (20% less cover) for glyphosate herbicides (Accord and Roundup) compared to triclopyr herbicides (Garlon), as similarly found in the first study. Control was maximized when herbicides were applied during the dormant season at the lowest or highest rates tested. Thus, privet can be treated most effectively during the dormant season when many native cohorts are dormant and by using rates as low as 1.5 quarts/a of Accord SP or equivalent glyphosate herbicides.

Biographical information: James (Jim) Miller has been Research Ecologist and Team Leader with the USFS Forest Service, Southern Research Station, and Affiliate Professor of Forestry with Auburn University School of Forestry and Wildlife Sciences for 25 years. He performs research in Forest Vegetation Management, especially on effective forest herbicide treatments and their impacts. He continues to research effective controls for nonnative invasive plants and promotes integrated management systems for these, including the promotion of coordinated detection and suppression programs by counties and states. He has designed and initiated a regional monitoring system for tracking invasive plants used by the Forest Service and state partners. The identification guide used for this survey will soon be available, entitled *Nonnative Invasive Plants of Southern Forests: A Field Guide for Identification and Control*. He also directs a region-wide study team that has been documenting pine plantation development, plant diversity, and soil C-N changes in seven southeastern states for 20 years. He studies changes in forest plant communities and soil productivity following forest management treatments. He has published over 100 reports; most noteworthy is the book and CD-version entitled *Forest Plants of the Southeast and Their Wildlife Uses* coauthored with Karl Miller, University of Georgia. He has earned a B.S. in forest management from Oklahoma State University (1967), a M.S. in forest ecology and silviculture from Purdue University (1969), and a Ph.D. from Oregon State University (1974).