War on Germany Ivy: Good News from the Front

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In the past fifteen years, *Senecio mikanioides Walp* (German ivy), an exotic vine native to South Africa, has become a major pest plant in coastal regions the full length of California covering native biological communities. It thrives in the San Francisco fog belt and is a major concern in the Golden Gate National Recreation Area (GGNRA).

A field trial examining three chemical control methods and solarization was carried out from May 1994 until September 1995 in the Presidio, GGNRA, in an attempt to find an effective, economically viable removal method for German Ivy. The site was partially tree shaded with sandy loam soil and >85% ground cover of German ivy. Initial treatments were:

(1) low volume application of twenty-five percent triclopyr, ester base, in seventy-five percent Hasten oil, applied at 320 liters/hectare in a low volume trickle on stems in strips 15-20 cm apart (LVT);

(2) vegetation weed whipped prior to low volume application of twenty-five percent triclopyr, ester base, in seventy-five percent Hasten oil, applied at 320 liters/hectare in a low volume trickle on stems in strips 15-20 cm apart (WWT);

(3) 0.5 percent triclopyr, 0.5 percent glyphosate, 0.1 percent silicone surfactant, and water, foliage sprayed over entire vegetation at 640 liters/hectare (LCFS); and

(4) controls;

(5) vegetation covered by clear plastic staked at ground level (solarized).

Each treatment was applied to three 12 m by 12 m blocks on the 2 hectare research site. The following measurements: dry weight biomass, water content and pH of the soil were taken in four 50 cm by 50 cm randomly located plots with each block, one week prior to treatment applications in June 1995 and compared to measurements taken post-treatment. Biomass samples were divided into above ground and below ground samples and then into dead and healthy tissue. The distance between the nearest above ground portion of 10 randomly chosen German ivy stolons in each experimental plot and the furthest distance in which rhizome tissue associated with it was killed was recorded.

On one-year post-initial treatments there was a significant reduction in the biomass of WWT and LCFS treated blocks compared to controls but no significant difference between controls and LVT or solarized blocks. The LCFS treatment blocks showed the greatest reduction in biomass of German ivy. A second treatment with 0.5 percent triclopyr, 0.5 percent glyphosate, 0.1 percent silicone surfactant, and water at 640 liters/hectare was applied to the LCFS blocks in June of 1995. Biomass sampling in September 1995 showed zero biomass of German ivy in the

re-treated blocks while the control blocks had a mean of 196.8 g/m^{-2}. Underground rhizomes died back 30-45 cm in the LVFS, 20-40 cm in the WWT, and 10-25 cm in the LVT treatment with no underground dieback observable in the controls. The storage of starch in the rhizomes, reflected in the underground dry weight biomass was significantly lower in the LCFS treated blocks as compared to controls in May 1995. This depletion of underground reserves contributed to the inability of German ivy to recover after the second LCFS treatment.

The appropriately timed application of a low concentration combination of triclopyr and glyphosate with addition of a silicone surfactant was an effective means of eradicating, within two growing seasons, German ivy from the treated blocks.