

Evaluating herbicides applied at low rates for annual weed control in wildlands.¹

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In wildland situations it is often useful to know just how little herbicide is required to kill annual weeds because of concerns for native vegetation that might be damaged by these herbicides. This field experiment was conducted on a naturally occurring population of invasive Mediterranean annual weeds on a California Department of Fish and Game Preserve in San Diego County, CA. Several weed species were present at the time of herbicide application; including wild radish, riggut brome, and prickly lettuce. These weeds were all mature, from 12 to 24 inches tall, with flowers and seed, but not yet senescing. The experiment utilized a completely randomized design with four replications. Plot size was 5 by 30 feet. Eight herbicides were applied on May 5, 2006 with a CO₂ backpack sprayer using 3 - 8002vs flat fan nozzles on a boom covering 5 feet at 40 psi for a spray volume of 48 gpa. Weather at time of application was 65 F, cloudy, and winds were 3-5 mph. Plots were visually evaluated for weed control on May 25 and June 23, 2006 (Table). Effective herbicide by weed treatments included chlorsulfuron, imazapic, and glyphosate on wild radish; clopyralid and glyphosate on prickly lettuce; and fluazifop and glyphosate on riggut brome. On May 3, 2007, about one year after treatment, percent cover was visually estimated. Most of the plots at this time were dominated by riggut brome, with cover ranging from 85 to 98%. Three of the herbicide treatments, imazapic, fluazifop, and glyphosate, reduced grass cover, with increased cover of broadleaf weeds and bare ground (Table).

Table 1. Herbicide treatments and visual evaluations for annual weed control, San Diego, CA.

| Herbicide | Rate ¹ | Weed control | | | | | | Cover | | | |
|-------------------|-------------------|-----------------|----|-----|---------------|----|-----|-------------|----|----|----|
| | | May 25, 2006 | | | June 23, 2006 | | | May 3, 2007 | | | |
| | | WR ² | PL | RB | WR | PL | RB | BM | PL | RB | BG |
| | lb/A | % | % | % | % | % | % | % | % | % | % |
| Triclopyr | 1 | 42 | 50 | 2 | 73 | 50 | 0 | 16 | 4 | 79 | 1 |
| Clopyralid | 0.12 | 5 | 31 | 5 | 1 | 88 | 0 | 2 | 0 | 98 | 0 |
| Chlorsulfuron | 0.024 | 90 | 31 | 0 | 99 | 42 | 0 | 13 | 1 | 86 | 0 |
| Aminopyralid | 0.05 | 42 | 54 | 4 | 27 | 50 | 4 | 11 | 0 | 86 | 3 |
| Imazapic | 0.125 | 61 | 17 | 0 | 99 | 5 | 12 | 9 | 7 | 32 | 52 |
| Fluazifop | 0.19 | 0 | 0 | 39 | 0 | 0 | 98 | 18 | 6 | 54 | 22 |
| Clethodim | 0.12 | 0 | 0 | 17 | 0 | 0 | 54 | 5 | 4 | 86 | 5 |
| Glyphosate | 0.75 | 96 | 79 | 100 | 100 | 98 | 100 | 30 | 18 | 30 | 22 |
| Untreated control | | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 85 | 8 |

¹ Rate for triclopyr, imazapyr, and glyphosate are ae, others are ai.

² WR – wild radish, PL – prickly lettuce, RB – riggut brome, BM – black mustard, BG – bare ground

¹ Originally published as a Research Progress Report, Western Society of Weed Science, 2008. The information in this report is not intended as a guideline or recommendation for control of invasive plants with the herbicides or control practices discussed. Please follow all applicable laws and regulations before using herbicides for control of invasive plants; along with complying with practices that protect you, other people, other species, and the natural environment.

