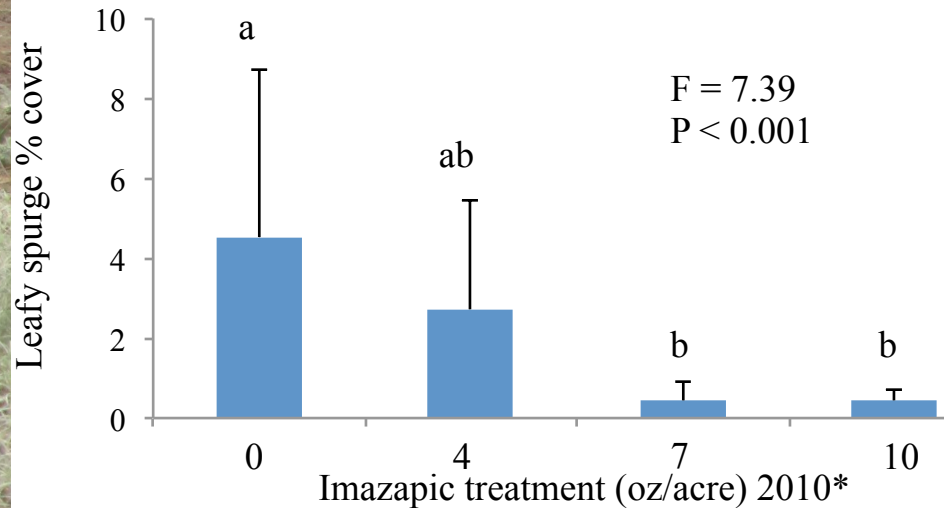
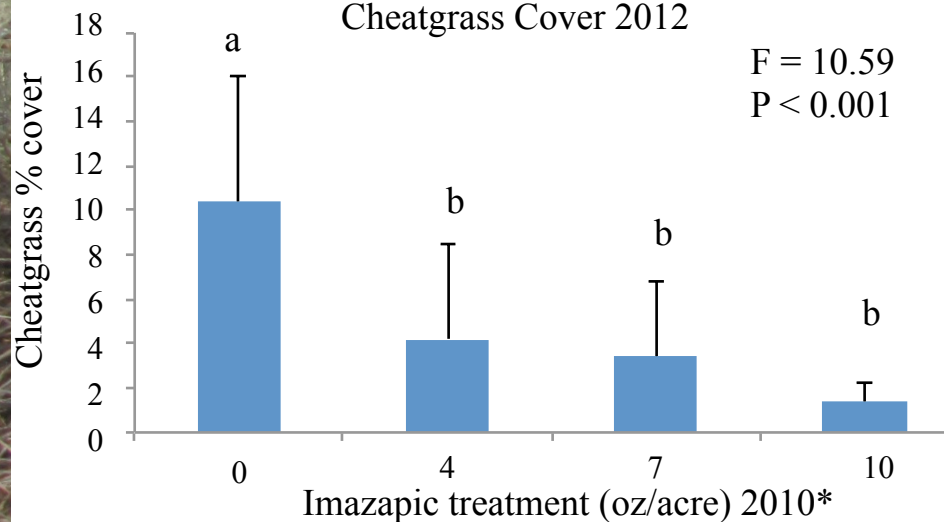


## Multi-year imazapic treatments: A strategy for control of leafy spurge and cheatgrass?

Leafy Spurge Cover 2012



Cheatgrass Cover 2012



\*Letters indicate differences at  $p < 0.05$ .

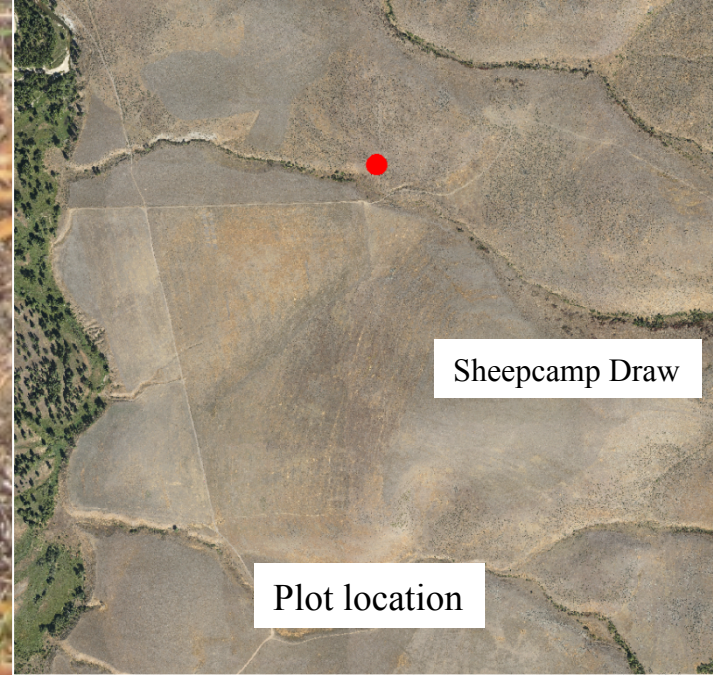
Repeated application of imazapic (7 or 10 oz per acre in 2010 and 7 oz per acre in 2011) reduced leafy spurge cover to below 1% in 2012. Surviving leafy spurge plants were small and chlorotic.

The 2011 and 2012 data revealed no differences in cover of any native species between treatments.






**Methods**  
In 2010 we established treatment plots, surveyed vegetation, and applied imazapic at four concentrations (0, 4, 7, and 10 oz/acre) with a backpack sprayer. The first herbicide application occurred in fall of 2010 when most native plants were inactive but before leafy spurge stems lost their latex. Vegetation surveyors recorded data again in 2011. A helicopter applied imazapic (7 oz/acre) to all plots in the fall of 2011. Crews performed the most recent vegetation survey in June 2012.



Leafy spurge treated with a sublethal dose of imazapic appears stunted and chlorotic. Minimized photosynthetic area will reduce root reserves.





Plots look barren after treating invasive species. Large grasses are sparse and forb diversity is low due to over grazing and invasive plant dominance. The conditions are primed for a secondary weed invasion if we do not seed these areas. Reseeding strategies will include use of “seed pillows” containing activated carbon to protect native seeds from herbicide.



We found small patches of cheatgrass and other annual species where groundcover may have intercepted imazapic. Cheatgrass control with imazapic requires herbicide contact with germinating seeds on the soil surface. Our results suggest that multiple imazapic applications may be advantageous for cheatgrass control. The first application thins the weed canopy and increases seed exposure to the second application.





Bare ground created by herbicide application.





Sulfur cinquefoil showed signs of chlorosis and poor vigor after imazapic exposure. Both leafy spurge and sulfur cinquefoil are active late in the season. At this time, most native species are dormant, and imazapic requires foliar uptake from established plants. Herbicide effects on sulfur cinquefoil were minor compared with leafy spurge. We expect the established plants to rebound from herbicide exposure within a year. However, treatments should eliminate seed production for one year and recruitment from seed for two years. This may decrease competition with native species.

